

SPECIAL THIS ISSUE

1st COMPLETE GUIDE TO THE FLORIDA KEYS

# skin diver

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## WHAT'S NEW IN INFLATABLES?

An SDM Roundup  
Of 15 Manufacturers

## EXPLORING NEW ENGLAND'S WATERS

## SOUTH CAICOS ISLAND OUTPOST

## BIG WRECK IN BERMUDA





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## "45 FEET DOWN, DIVING FOR LOBSTER OFF ANACAPA ISLAND, SUDDENLY I HEARD..."

... my buddy transmitting over his SPORT-PHONE™ Diver C.B. He was about 40 feet behind me and out of sight, but the message came through loud and clear.

'Get over here,' he said.

I transmitted back, 'What did you find?'

'Dinner for six!'

'Say again?'

'The Loch Ness lobster.'

'On my way.' When I reached him, Dave was hovering in front of a crevice.

'It's a big bull... got himself stuck in there.'

I could see the bug's feelers waving just inside the crevice. If Dave tried pulling the feelers, the bug would just shed them.

Dave said, 'Any ideas?'

'Reach in and push him,' I said.

'Okay.'

'And watch out for morays.'

'Thanks.' Pushing the bug freed its locked-in spines.

A moment later he was in the goodie bag. 'Let's mark this spot... come back for more tomorrow.'

'Roger.' I secured my WET-BEACON™ to the crevice, then we headed for the surface.

That night, during our feast, we agreed that talking to each other gave us a new kind of freedom underwater. I mean, it really expands your whole diving experience."

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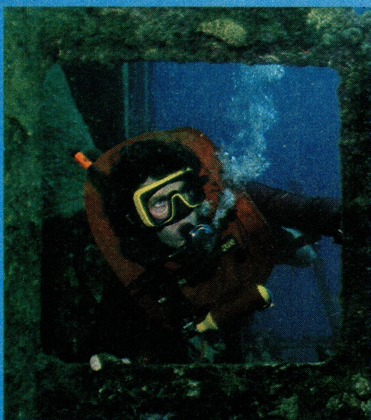


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# skin diver

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## COVER

Come on in . . . the water's fine! Divemaster Dee Scarr takes the plunge as SDM takes you on another month's adventure tour of some of the world's best dive spots. Photo by Geri Murphy.

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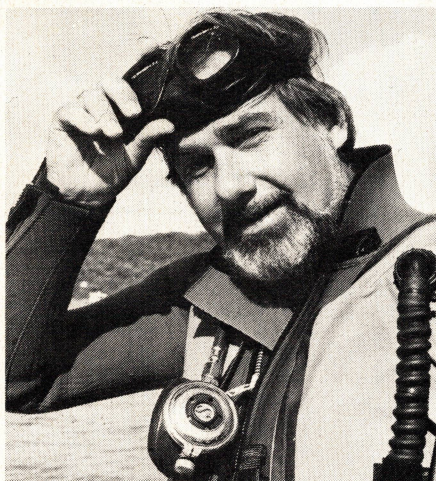
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# SDM Editorial

BY THE PUBLISHER



## PLAY IT SAFE . . . TAKE FIVE AT TEN

**A**s dive activities become more sophisticated, we find ourselves in need of a better working knowledge about decompression tables and procedures. This is evidenced by the growing number of decompression aids now available on the market. Sport divers are going deeper, staying longer, and becoming more vulnerable to bends than ever before.

It is now believed that the No Decompression Table is potentially the most dangerous of all decompression tables if improperly applied.

The danger lies in the fact that a diver who follows this table ascends to the surface *without taking any decompression stops at all*. If he has made any sort of error in bottom time computation, or has pushed his dive beyond the limits, the chances for a bends hit is greater than with the diver who has made a deeper/longer dive and took some decompression at the required stops. *Some*

*decompression time is better than none at all.*

To better explain the problem, let's go back a few steps to the source of the No Decompression Table. When the U.S. Navy Standard Air Decompression Table was developed years ago, the Navy conservatively estimated a built-in error of five percent. Subsequent review of logged dives by Navy divers has revealed only a .6 percent error factor. However, it must be remembered that this reduction in the error factor is based on Navy divers, who were pre-scanned for medical problems, age, health, etc.

Since the No Decompression Table is based on the Standard Air Decompression Table, it is bound by the very same rules, procedures, and built-in error factors. It certainly is no safer or no different than the Standard Table.

Unlike the Navy diver, today's sport diver does not have all the trimmings which go along with the Decompression Tables. There is no timekeeper to precisely measure each diver's descent time, bottom time, ascent time, and decompression stop time. There is no medical doctor to examine him prior to the dive, and there is no recompression chamber standing by.

It has been observed that most sport divers fail to follow the prescribed ascent rate of 60 feet per minute. They have no way or instrument for gauging ascent speed, and invariably come up too fast. This is one of the key problems in using the No Decompression Table.

Too many sport divers apply the No Decompression Table incorrectly by not adding their descent time to the total bottom time limit.


Far too many sport divers are playing the No Decompression Table too close to its absolute limit. They leave themselves no safety margin for personal error or unforeseen emergencies. Was the watch bezel precisely set at the start of the dive? Was the bezel bumped or moved somehow during the dive? Is the depth gauge really accurate at depth? It's these little

things which can get a diver in trouble, and help push him beyond the safe limit.

Furthermore, few sport divers realize how increased depth can amplify the danger factor. For example, a one or two minute error in bottom time computation at a depth of 90 feet could get you bent. But at a depth of 150 feet, the margin for error might be just a few seconds. The deeper you go, the more critical the timing. And yet the deeper you go, the less likely you will be able to function precisely because of the dulling, numbing effect of nitrogen narcosis.

How can you utilize the No Decompression Table safely? Follow these steps and you may save yourself a lot of trouble and pain:

- a) Be sure your watch is precisely set at the start of the dive and that your depth gauge is functioning accurately. Do not depend solely or completely on any automatic decompression device. Always use the U.S. Navy Tables as a backup.
- b) Be very sure you are following the prescribed ascent rate of 60 feet per minute. Use an anchor line or descent line to help gauge your speed. Practice your ascent speed by timing yourself over a preset distance. It should take a full minute to come up from 60 feet.
- c) Spend a few minutes decompressing at 10 feet, whether you think you need it or not. It certainly cannot hurt you, but could help compensate for any errors or physiology problems of which you may not be aware. If you come anywhere near the bottom time limit (within four or five minutes) during a No Decompression dive in the 40 to 140 foot depth range, take a full five minutes decompression.

It is the opinion of this magazine that sport divers should contain their diving to well within the limits of the No Decompression Table, and they should use this table wisely and conservatively. Leave decompression diving to the professionals; they get paid for taking risks. 





## Imperial Twins

Looking for quality? Take a look at two of Imperial's finest diving suits. The King Turtle is nylon inside and out, and whether you choose the farmer style with bib pants and jacket, or the standard model that Kevin is wearing, you'll find this suit exceedingly beautiful and comfortable.

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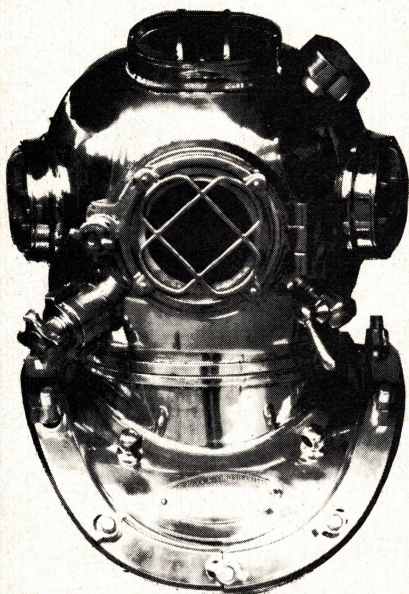


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# Underwater Forum

## Lead Fumes — Toxic!

In the Underwater Forum of the April '79 issue of SDM, David Forsberg suggested that divers can save money by pouring their own lead weights. He also indicated that he used his kitchen stove to heat the lead and used an exhaust fan on "high."

As a chemist involved in environmental biochemistry and a NAUI instructor, I want to warn everyone that this procedure is dangerous and life-threatening. Home exhaust fans are not equipped to remove toxic lead fumes. The fumes will not only immediately get into the person's body, but lead will contaminate the residence and result in long-term exposure. Lead must be poured out-of-doors, preferably in a light breeze. The diver should not breathe the lead fumes.

NEAL LANGERMAN NAUI #4135  
Assoc. Professor of Chemistry  
Utah State University

## BSAC Dive Manual

In the February, 1979, issue of your magazine, on page 44, there is a report stating that Seapen Books distributes the new dive manual published by the British Sub-Aqua Club. Unfortunately, this is not the case. An agreement has been signed with Charles Scribner's Sons of 597 Fifth Avenue, New York, NY 10017, appointing that company the sole agent for the U.S. with exclusive rights to distribute the manual in the United States and Canada.

Charles Scribner's Sons will be holding stocks of the manual and will be able to meet orders placed by booksellers in either of these two territories.

B. SHALLY  
BSAC Publications Mgr.  
London, England

## Looe Key Struggle

All of us at The Marine Wilderness Society were pleased to see your article on Little Looe Key in the March, 1979 SDM. The Marine Wilderness Society has been in the thick of the political fight to establish the Looe Key Marine Sanctuary since July of 1978. Our intense involvement in this issue, and our dealings with the federal agencies embroiled in this controversy, have clearly revealed to us that the major opposition to the designation of this sanctuary comes from commercial fishing interests. This opposition succeeded in halting processing of the Looe Key Marine Sanctuary nomination in July of 1978. And we have been lobbying to get this nomination reactivated since then.

We are conducting a petition drive in

support of the establishment of Looe Key Reef Marine Sanctuary. To date, we have collected over 4200 signatures of concerned divers and other people. But it is now clear that we will need many more thousands of signatures.

Readers wishing to receive petition blanks plus additional information on the struggle to establish the Looe Key Reef Marine Sanctuary should write to The Marine Wilderness Society, P.O. Box 943, Miami, Florida 33165. As an organization strictly engaged in activities dealing with marine conservation, we will be happy to provide these materials without cost to any divers who write to us.

ALEXANDER STONE, Director  
The Marine Wilderness Society  
Miami, FL

## Sharing Information

When I read your article concerning shipwreck legislation in the April, 1979 issue of SKIN DIVER, I nearly fell out of my chair. An archaeologist myself, I know that archaeologists today would not be this advanced had they not been guided by the interests of amateurs. If treasure salvors did not devote their time and risk their lives to recover historic artifacts, much important archaeological information would still be submerged.

There is, however, one major problem: Artifacts lost after recovery. To avoid this, marine archaeologists and salvaging companies should cooperate, perhaps using the Department of the Interior as a central clearing house for information.

SAL D'ASCOLI  
ALBANY, NY

## Wogg Divers

A new organization has been formed for the sport diver — the Wogg Divers Association. This is an organization devoted to diver safety and enjoyment. Members are required to use BC's, auto inflators, submersible pressure gauges and bipus regulators.

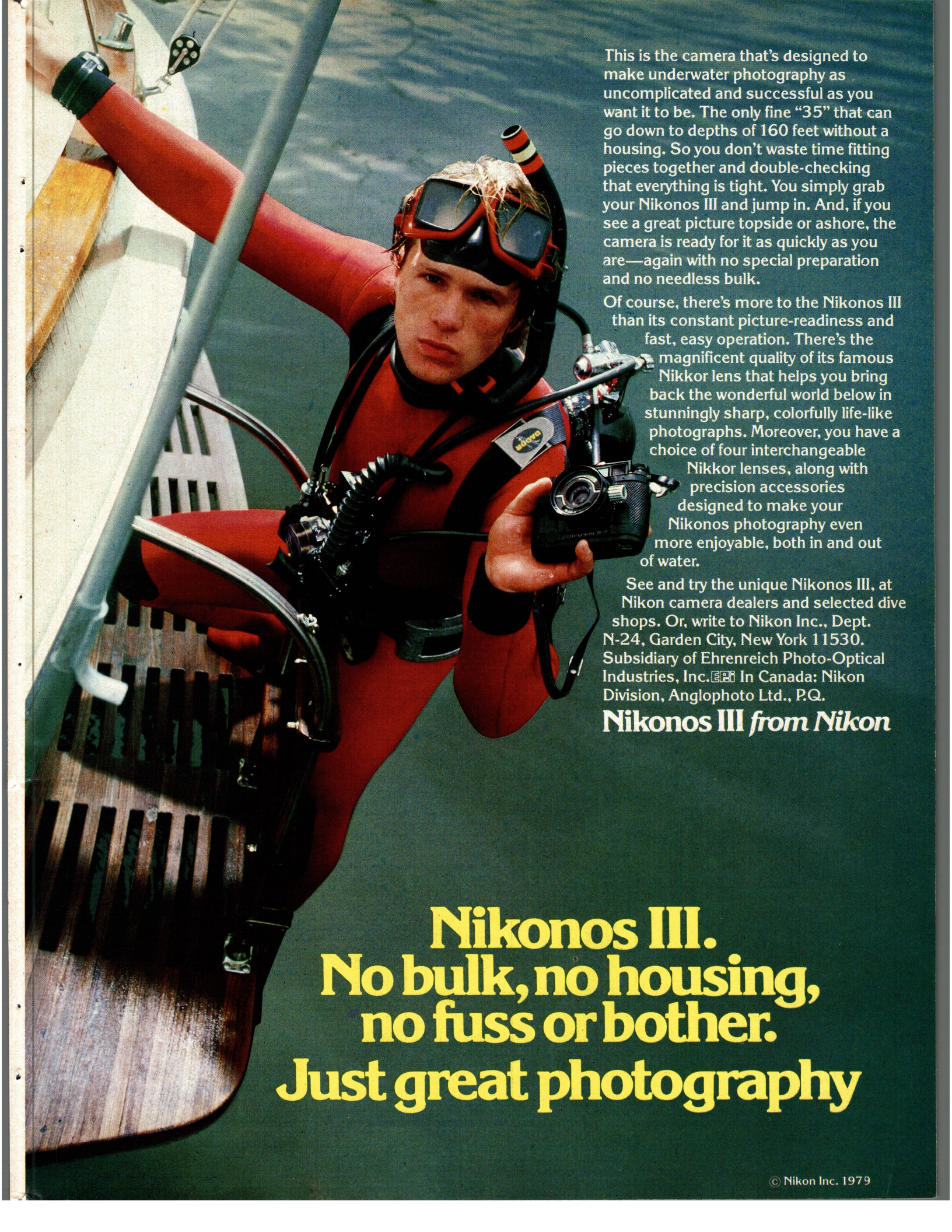
The Wogg Divers Association was formed especially for people who would like to make diving a lifetime profession and/or those who are interested in advanced or specialty diving. For information write:

PAUL G. HARRIS  
Star Route #1  
Wolfeboro, NH 03894

## Recycling Oil


Currently many motorists dump their used motor oil into gutter drains, etc. This  
(Continued on Page 12)



A full-page photograph of a male diver in a red wetsuit and black mask with orange accents. He is holding a Nikonos III camera in his right hand. He is standing on the wooden deck of a boat, with a metal railing visible. The background is a clear blue sky.

This is the camera that's designed to make underwater photography as uncomplicated and successful as you want it to be. The only fine "35" that can go down to depths of 160 feet without a housing. So you don't waste time fitting pieces together and double-checking that everything is tight. You simply grab your Nikonos III and jump in. And, if you see a great picture topside or ashore, the camera is ready for it as quickly as you are—again with no special preparation and no needless bulk.

Of course, there's more to the Nikonos III than its constant picture-readiness and fast, easy operation. There's the magnificent quality of its famous Nikkor lens that helps you bring back the wonderful world below in stunningly sharp, colorfully life-like photographs. Moreover, you have a choice of four interchangeable Nikkor lenses, along with precision accessories designed to make your Nikonos photography even more enjoyable, both in and out of water.

See and try the unique Nikonos III, at Nikon camera dealers and selected dive shops. Or, write to Nikon Inc., Dept. N-24, Garden City, New York 11530. Subsidiary of Ehrenreich Photo-Optical Industries, Inc.  In Canada: Nikon Division, Anglophoto Ltd., P.Q.

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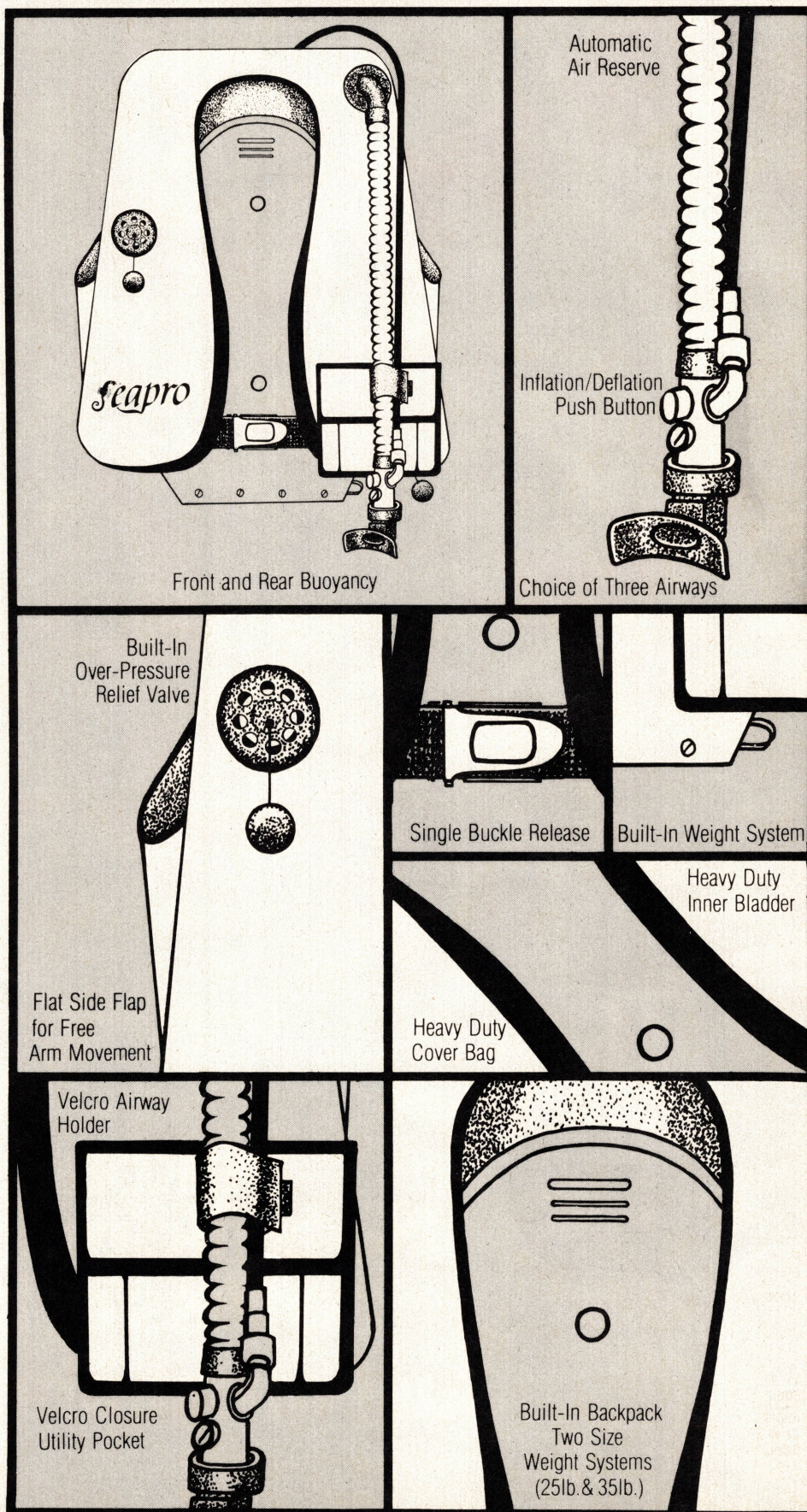
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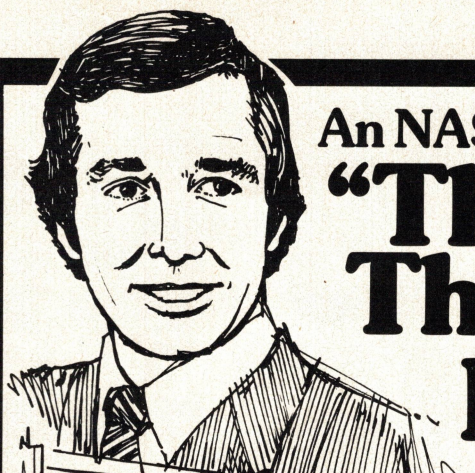
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DEALERS: If you are interested in becoming a Security Jacket dealer, forward this coupon to Seapro and we will contact you.







An NASDS Profile: Jeff Yordy

# "The Ten Weeks That Changed My Life."

Seven years ago Jeff Yordy was teaching math and science to Jr. High School students.

Five years ago, he changed his career.

For 10 weeks, Jeff Yordy dedicated himself to learning at the NASDS Instructional Diving College in San

Diego. Upon completion, he moved to St. Petersburg, Fla. where a position had been arranged for him by the

College at the Tackle Shack. For two years he learned the diving business inside and out.

In 1976, he was offered a manager/partnership position at World of Water in Tampa. He

accepted the challenge. One year, a full time staff of instructors and an NASDS

affiliation later, World of Water celebrated its best year

ever. Another year passed and another record set, this

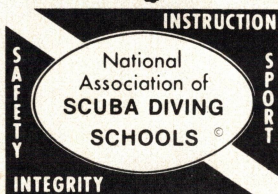
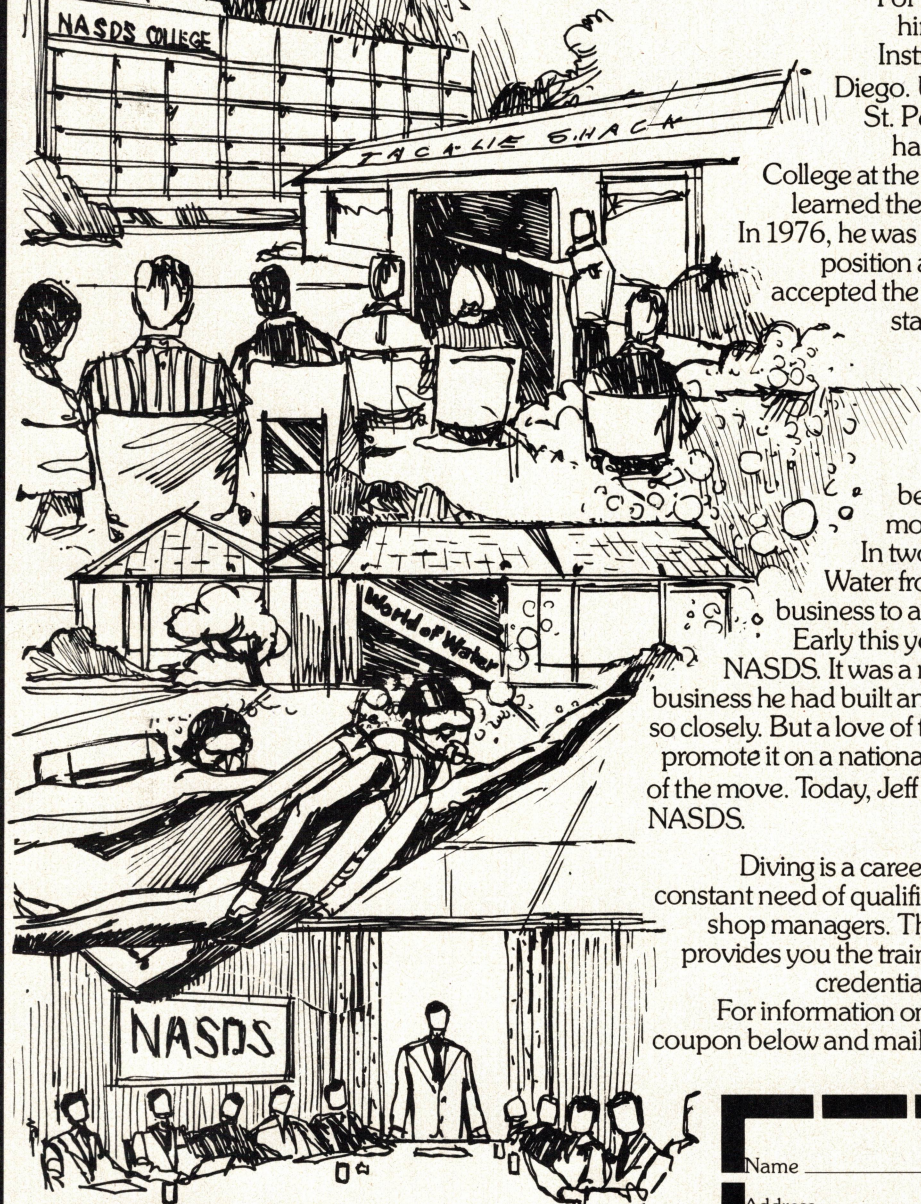
time in a new facility that has been heralded as one of the most modern and complete in the state.

In two years, Jeff had taken World of Water from an \$80,000 a year marginal business to a \$500,000 story-book success.

Early this year he was offered a position by NASDS. It was a most difficult decision to leave a business he had built and partners he had worked with so closely. But a love of the sport and an opportunity to promote it on a national level tipped the scales in favor of the move. Today, Jeff Yordy is Associate Director of NASDS.

Diving is a career. The sport diving industry is in constant need of qualified instructor/divers, resort and shop managers. The NASDS instructional college provides you the training and, more importantly, the credentials to enter the field successfully.

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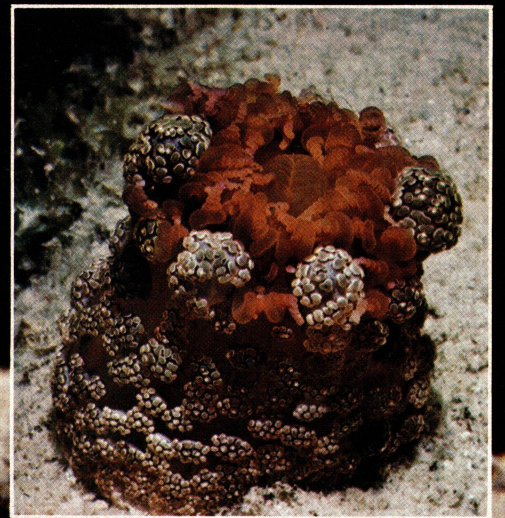
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**BEWARE**





# THE BEAUTIFUL

# ALICIID

TEXT BY SUZANNE FLINT/PHOTOGRAPHY BY DICK HARRISON

**P**ossibly the most beautiful and least frequently encountered member of the sea anemone family is *Alicia mirabilis*. This species of aliciid, classified as an anthozoan, is referred to as the berried anemone — because of the clusters of multi-hued, specialized cells found bunched and woven around its exterior stalk. These black, white and pink berrylike structures identify this unique, dangerous sea creature.

As a general precaution it is best to avoid any direct contact with these berries. They are extremely potent forms of nematocysts (stinging cells), capable of severely harming bare flesh.

Curiosity overcame one of the few divers known to have observed this uncommon marine invertebrate. While night diving at Bonaire in 1976, an experienced instructor encountered an eight inch tall specimen in shallow water at a regularly visited dive spot. He reported that touching just one of the massive batteries of nematocysts was remarkably similar to putting one's finger into a live electrical outlet; the initial jolt left a painful reminder of the aliciid in the form of a stinging sensation which lasted two days.

What happened to this too-daring diver? The painful consequence was the result of the anemone's protective mechanism: Coiled threads, located in the sac of the nematocyst, were released — triggered by the stimulus of the diver's probing finger. A neurotoxin, produced by the aliciid, was injected into the diver's skin by a barb at the end of the tiny uncoiled thread.

It is believed the aliciid uses its powerful arsenal of stinging

cells to protect its stalk. Exposed as it stretches, the stalk unfurls and spreads the delicate tentacles to feed in the plankton-rich waters during the blackness of night. Truly a nocturnal animal, the aliciid shuns light and uses its single foot to crawl under the shelter of the nearest rock during the day.

If exposed to a diver's light or the brilliance of a photographic flash at night, the aliciid will show its irritation by withdrawing all its tentacles and shortening the extended stalk. This general scrunching down into a defensive posture, with berries compacted, has the aliciid bristling with potential danger.

Available literature contains few references to this member of the scientific family Aliciidae. It may be necessary to look through many indexes of marine biology and zoology publications for the slightest mention of this rare coelenterate. Even the National Museum of Natural History at the Smithsonian Institute reports no collected specimen.

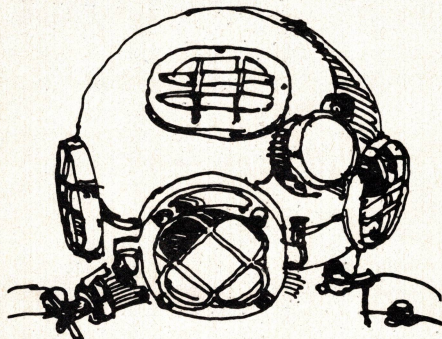
A ten inch tall aliciid was observed at Riviera Beach, Florida at 30 feet in the summer of 1977. A four-inch specimen, believed to be a juvenile, was viewed in a shallow area of the harbor at Bonaire in September, 1978. It was found on the same rocky ledge on each of several night dives over a two week period, but was nowhere to be found during the day.

Some night, under warm tropical waters, you also may be fortunate enough to experience the delicate and seductive beauty of pretty *Alicia*. Enjoy and be fascinated by its fragile appearance, but resist the temptation to touch. >

**Should you discover the seductive beauty of this rare coelenterate on a warm, tropical night dive, resist the temptation to touch. Its pastel-colored berrylike structures pack a powerful wallop.**



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### Commercial Diver Training Division

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## UNDERWATER FORUM

(Continued from Page 6)

oil eventually ends up in various rivers or oceans, contributing to a severe pollution problem. Many gas stations will recycle used motor oil free of charge.

In Maryland, SDM readers can call (301) 699-4177 for a list of gas stations that recycle oil. Residents in other states should ask their local gas stations about a recycling service.  
RANDALL FOY  
OXON HILL, MD

### Divers Flag

I read your tribute to the divers flag [SDM Mar. '79] with interest, since I was struck by a boat while diving in Wisconsin last July. My usual procedure, towing a flag mounted on an inner tube, was not followed because of misplaced ropes. Instead, on this particular dive, two flags were displayed from our boat.

After the dive, just as I was about to break the surface, I felt a vibration. With instinct I didn't know existed, I dove as hard and as fast as I could. It wasn't fast enough; I was struck on the leg. I have been diving for 17 years and have had many boats come within a couple feet from my flag. On this occasion I was struck about 60 feet away from our boat.

Divers have been trying to educate the public for many years, but in states such as Minnesota that is quite a task. With so many lakes and weekend boaters it would be impossible to enforce such a thing as a divers flag law. Towing a divers flag on a float and surfacing right next to it seems to be the answer for now. Also, I hope other divers will be aware of how quiet some of the new outboard motors are. I did not hear this one approaching. And I was lucky, being only badly bruised.

TOM McCLUSKY  
ANOKA, MINN.

### Instructor/Student Ratios

Instructors for nine years, we were concerned by the letter "He Appreciates Women" in the March 1979 issue. With some exceptions, I agree with Mike Rice about women being good, concerned buddies. I have also had many top notch male dive partners. What concerns me is his comment about "... wide-eyed enthusiastic divers ... never received any individual attention until the day of the ocean check-out." Even that attention came not from the instructor but from the young assistant instructor, Cheryl.

What happens to the others in the class that are neglected by an overworked instructor in his/her heavily overcrowded class and do not have the luxury of even an assistant's help? People interested in taking a dive class are warned about many things to watch for in choosing a

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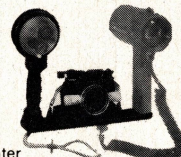
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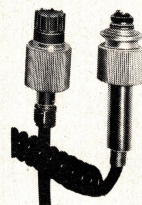
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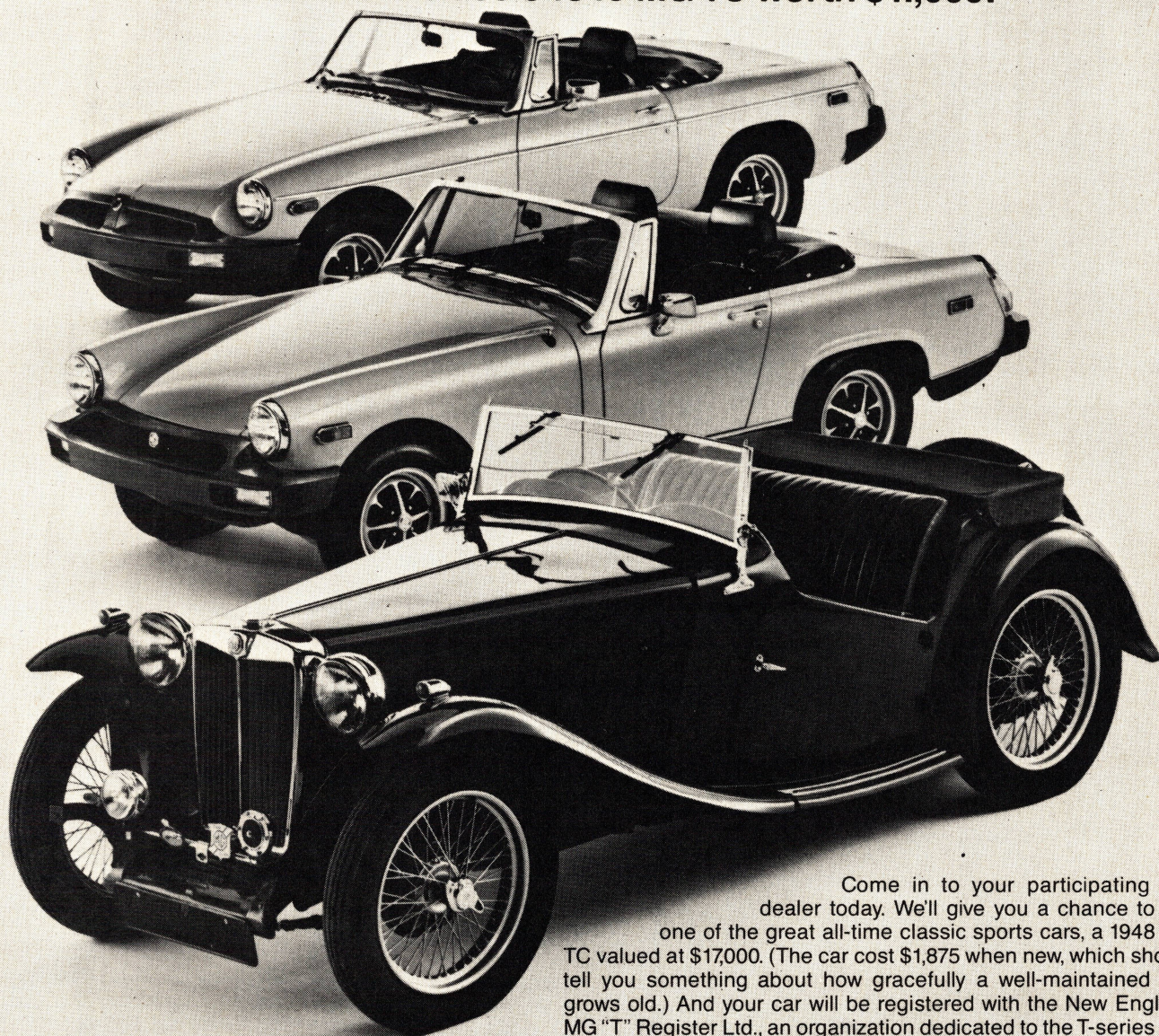
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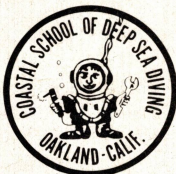
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SD-79

## UNDERWATER FORUM

good basic class, and I think that the student/instructor ratio (not assistant!) is an important point.

Even the best instructor cannot adequately handle 50 students at one time without an incredible staff, probably involving other instructors assisting with the class under the program director. (Some national instructor organizations recommend 10 students per instructor and 4 students per certified assistant instructor.) If that staff is not available, the class size should be restricted. In either case, prospective students have the right to know if his/her first buddy breathing exercise will be observed by the instructor, or some advanced diver, or by no one directly.

I believe that the diving drop-out rate is directly proportional to the rapport between the student and the instructor. (Face it, regardless of organizational affiliation, it is the instructor alone who ultimately makes or breaks a diving program.) So, we instructors must keep our class sizes at a level that we can justify for close attention to each student's needs. And students, by all means, sign up for a dive program suited to your needs and ask questions about the class instructor and staff before laying down your money.

PAUL BUCKLEY

JIM SMITHERS

Lancaster, TX

### Sea Turtle Plight

As a biologist who has spent the past five years working for the conservation of sea turtles and studying them in their natural habitats in Costa Rica, Nicaragua and Ascension Island in the South Atlantic Ocean, I read your article, Sea Turtles — Roaming Reptiles of the Deep, in the March, '79 issue with interest. I am afraid, however, that I must differ with the statement that "much has been done to save the sea turtle . . . Gradually, the population of sea turtles is again increasing."

Unfortunately, our efforts thus far have only *slowed* the *decrease* of turtle populations. Virtually every population of sea turtles in the world is still on the decline. One of the most endangered species is the hawksbill, which frequents tropical reefs. Too often these turtles fall prey to the speargun-happy diver.

As divers, let's do our part to enhance the survival of these fascinating animals. Next time any of us comes upon a sea turtle in its natural environment, why not just quietly observe, and enjoy the unique privilege of being able to share its ocean world at such close quarters.

JEANNE A. MORTIMER

Dept. of Zoology

Univ. of Florida, Gainesville



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## DEMA STATISTICS RELEASED

The attendance figures and survey statistics have been compiled from the 1979 DEMA (Diving Equipment Manufacturer's Assn.) Show, held January 20-23 in New Orleans, Louisiana, and all indicators point to a dive business boom in the United States and abroad. More people are learning how to dive, more equipment is being bought and sold, and more divers are traveling to local and far-off places to pursue their U/W interests.

DEMA recently announced that 1885 persons representing 901 dive retailers from the United States and foreign countries attended this year's show. Within the U.S., 49 of 50 states were represented — all but New Hampshire — indicating a spread of underwater interest across the country. Twenty-eight foreign countries were represented. Some manufacturers reported as much as a 500 percent increase in sales over last year's DEMA show.

In the survey questionnaire that DEMA distributed at the show, more than 95 percent of the attendants said they'd be back next year; 30 non-exhibitors had already signed up for space before this

year's show was over. DEMA anticipates a 50 percent increase in next year's show participation. To handle the increase, the Marriott Hotel in New Orleans has been reserved for the January, 1980, event. For information, contact DEMA, P.O. Box 4067, Irvine, CA 92716. ➤

## HARVEY'S WETSUITS

From the windows of his second-floor office in Kent, Washington, Harvey Grohs watches as his 60 plus craftsmen complete as many as 400 wetsuits per day.

"I started myself out with no employees. I did the designing and building along with running the retail business. I did everything plus promote my foreign trade, teach classes, and build houses," Harvey says.

Having outgrown the original facility, Harvey's moved in 1973 to the plant's present location on Pacific Highway South in Kent. With the larger quarters Harvey's was then able to branch out into all areas of water sports including waterskiing, surfing, and windsurfing. In spite of the company's large volume, Harvey's is still sold on the concept of custom-fitted suits.

Harvey's now has agents in Europe and the Orient plus a newly established plant in Canada operating as Harvey's Skindiving Wetsuits of Canada at 9 Hanna Avenue, Toronto, Ontario. ➤

## PADI'S NEW ITC

PADI Headquarters staff members will conduct a special ITC at PADI International College in San Diego, California from September 22-28, 1979.

Studies have identified specific problems in diver training methods. According to Dennis Graver, PADI Director of Training, "Trends in diving activity have demonstrated a need for a change in teaching philosophy. Numerous successes by PADI instructors have been combined to produce a remarkable new training approach. These methods form the basis for the new Instructor Training concept."

Persons interested in the seven day PADI ITC, should contact: PADI, 2064 N. Bush St., Santa Ana, CA 92706. ➤

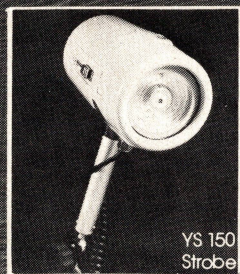
## O'NEILL'S SUPERLITES

O'Neill, Inc., of Santa Cruz, California, has introduced a new line of wetsuits styled for the 1980's. Named SuperLite, the wetsuits are made of a new ultra light neoprene product called LD-3 Super-Foam, available only from O'Neill.

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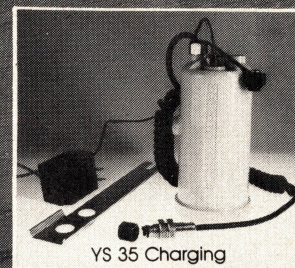
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# Medifacts

BY CHARLES V. BROWN, M.D.

## OUR READERS ASK

**R**eaders R. L. Clements of Tauranga, New Zealand tells of a veteran diver who suffered spinal bends and, in spite of 48 hours of treatment, is still paralyzed below the waist and lacks bladder control. Is there hope for improvement?

**Answer:** Spinal hits occur frequently in divers who consistently break the law (i.e. the U.S. Navy tables), and occasionally in divers who do not, but have predisposing factors. When a spinal hit does not respond well to initial recompression, it is usually improved by a course of hyperbaric treatments lasting several weeks. Beyond that, slow, gradual improvement often occurs over the next year or two. A lot depends on the victim's motivation — he or she must really concentrate on a rehabilitation program.

Although restoration of function cannot be guaranteed, the human organism is capable of tremendous adaptation. Disabilities which cause some to give up

stimulate others to over achieve and come out ahead.

## MISBEHAVING HEART

Mr. W. E. W. of Harrisburg, PA is 44 years old and thoroughly enjoys scuba diving. Unfortunately, his heart misbehaved last year because arteriosclerosis plugged up a coronary artery. A by-pass operation (installing a healthy vessel to carry blood around the block) has corrected the problem, and he claims complete recovery. His physical exam is normal, and so is an EKG taken during exercise. He's faithful to his diet, and takes two aspirins daily as prescribed. Nonetheless, his doctors hedge about allowing him to resume diving.

**Answer:** You've opened a can of worms. It's controversial. Exercise and escape from everyday tensions are good for you, and diving can provide both. Your doctors would probably say yes to jogging, handball, and other sports. The chances are you'd have no trouble diving. Anyway, it's your life, and shouldn't you have the right to decide?

Before you do decide, think hard about the negative aspects. The factors that brought on your coronary obstruction might bring on another. Surely some are still operative; there's not much you can do about heredity or the calendar. And others may become operative. Tensions can arise at home or at work, and diets seem made to be broken. Furthermore,

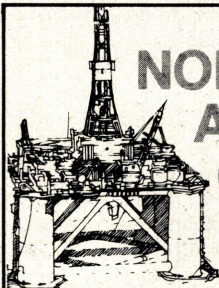
there is evidence that people predisposed to heart attacks are more likely to have them while diving than during similar periods of topside activity. Finally, you'd be less likely to survive an attack that occurred in the water.

For these reasons and others, most authorities would discourage you from further diving. If you decide to dive anyway, be sure your buddy knows what to do and how to get help, just in case.

## SUB SNORKEL

An ex-Navy submariner tells of serving long ago on a submarine that used a snorkel to provide air for its diesel engines when running just below the surface. Sometimes the snorkel would accidentally submerge. The diesels would then suck air from the sub's interior until shut off, creating a partial vacuum that would last up to several minutes. Subsequently the submariner developed a number of disorders including hypertension, peptic ulcer, heart attacks, osteoarthritis, and poor healing of a fracture. The question arose as to whether the repeated rapid decompressions may have been responsible.

**Answer:** It's true that one doesn't have to be a diver to suffer dysbarism (pressure-related disorders). Here we have a submarine behaving like an altitude chamber or an airplane that loses its cabin pressure. Possible ill effects would be the same as for a diver ascending too

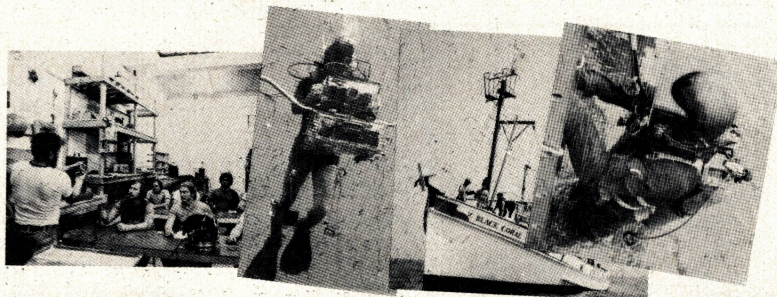


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## MEDIFACTS

rapidly: reverse squeeze, lung over-pressure, and decompression sickness. However, none of these would account for the ailments which overtook our unfortunate submariner.

### SWIMMER'S EAR

Dennis Schlegel had to cancel a dive in the Florida Keys because of a pressure sensation in one ear. Other divers told him the problem was swimmer's ear. Dennis lives in Dubuque, Iowa, and warm water trips are not easy to arrange. He has fond hopes for a visit to some dive paradise and wants to be sure that swimmer's ear won't ruin the trip.

**Answer:** Swimmer's ear is an infection of the external ear canal. It can usually be prevented by an acetic acid preparation such as Vosol Otic or an acid-alcohol preparation such as Swim Ear. One of these, or a similar preparation, can be obtained without prescription from drug stores or from some dive shops. I suggest putting several drops in the ear before and after diving.

But don't expect this kind of treatment to help if your diagnosis is wrong. Pressure sensation is a common symptom of middle ear squeeze or infection, and these call for entirely different measures. If it hits you again, better let a doctor decide what's really wrong.

### GALL BLADDER

Anthony Bonanno of Astoria, New York had to have his gall bladder removed. His doctors admit they know nothing about diving, but suggest that to play safe he give it up. Since Anthony would sooner give up his right arm, he wants another opinion. Will there be harmful side effects, particularly with regard to squeeze or nitrogen build-up?

**Answer:** After your surgeon says the wound is healed and there are no complications, feel free to dive. The rules for diving safety remain the same as before your operation.

### EPILEPSY

A reader from Wright State University in Dayton, Ohio requests information relating to epilepsy in sport diving.

**Answer:** We've heard that some epileptics do dive, but have not yet encountered any. We do know of one young man in a diving class who had a seizure at poolside, and another who had a seizure just after a simulated dive in a recompression chamber. Had those seizures occurred in the water, both very likely would have drowned. Both had concealed a seizure history from their instructors. Diving medical authorities consider seizure disorders an absolute contraindication to diving.

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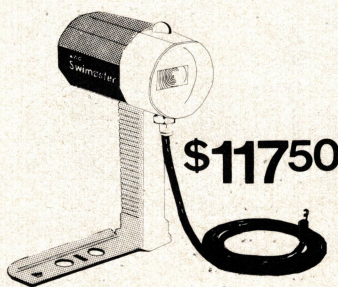
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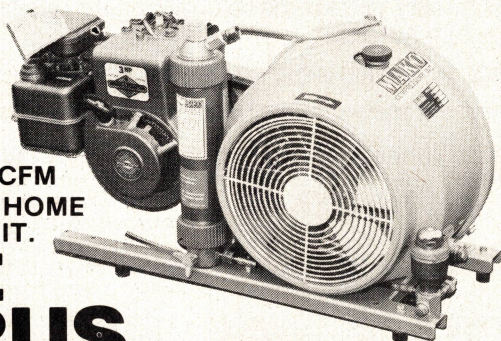


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Planet Water is narrated in person by Rick Frehsee, known for his work with Captain Jacques Cousteau, National Geographic and SKIN DIVER Magazine. The show is approximately three hours long with a 15 minute intermission. A Bahamas dive vacation will be the door prize at each show. Cocktail socials immediately following the programs are planned in many cities to give the audience an opportunity to meet and talk with the presenters.

Planet Water '79 will be held in cities throughout the U.S. including Tuscaloosa, Alabama; Orlando, Tallahassee and Tampa, Florida; Atlanta, Georgia and Houston, Texas (at NAUI's IQ-11).

Watch for Planet Water '79 in your area. It promises to be one of the diving world's great social events of the year!

For information on booking or schedules, contact: Planet Water '79, % Omorka Ltd., P.O. Box 76721, Atlanta, Georgia 30328, (404) 428-1588.

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Of all hostile environments, the sea is perhaps the most forbidding. Both camera and photographer must go under with everything they need for survival. But aside from safety considerations, the special requirements of marine photography put a great burden on any camera.

Chris Newbert's specialty is the photography of underwater marine life, and for this he chose the F-1 as his exclusive system.

"Mechanically," he says, "the F-1 is the epitome of equipment designed for use underwater, with a ruggedness and smoothness of operation that's essential for this type of work. My first F-1 was completely flooded with salt water. This almost certainly destroys a camera completely within a short time. After a thorough rinsing in fresh water and subsequent drying out, it functioned for months until the housing manufacturer replaced it—a very rare and nearly impossible performance!"

Chris leans heavily towards the Canon Super Wide Angle lenses for startlingly dramatic close-ups and towards the Canon Macro lenses (FD 50mm f3.5 SSC Macro and FD 100mm f4 SC Macro) for their exceptional flexibility in focusing range underwater, where changing lenses is out of the question.

For the photograph of the jellyfish reproduced here, Chris used the FD 50mm f3.5 SSC Macro with electronic flash for fill. "The incredibly sharp Canon Macro lenses are invaluable under water, where I can photograph a 1" long sea slug at one moment and a 12' manta ray at the next with a simple twist of the focusing ring. But of course, the most innovative thing about the F-1 is that

*Chris Newbert and the Canon F-1*

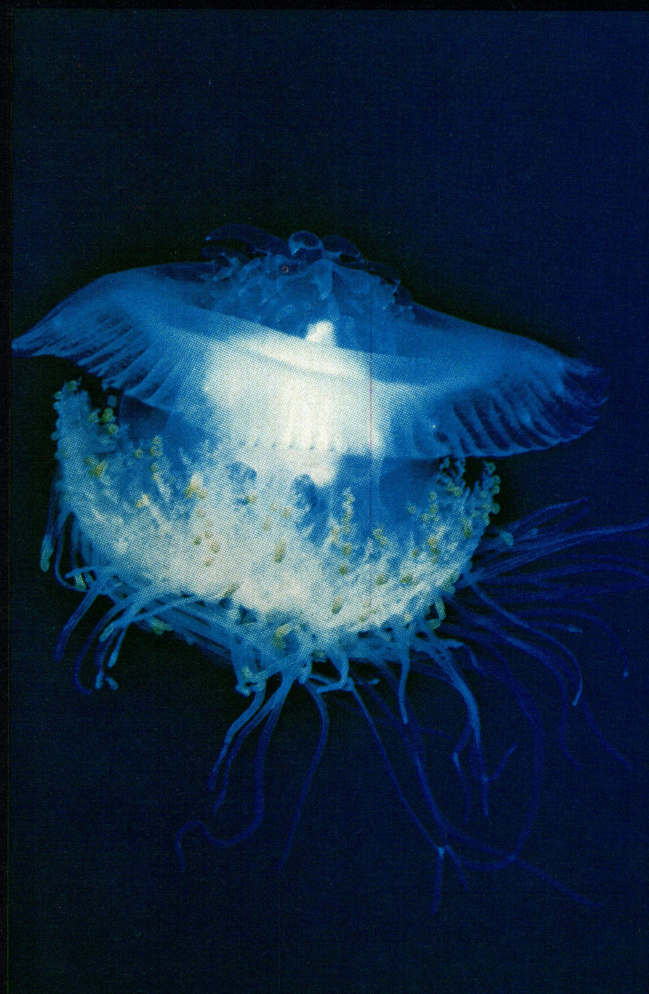


Photo taken with Canon F-1 and FD 50mm f3.5 SSC Macro lens. 1/60 sec. at f11. ASA 25

*'The F-1 helps me bring marine life to life'*

# Canon® F-1

you can use the Speed Finder in an underwater housing and still make full use of the camera's built-in metering system. It's great."

The Canon F-1 system has fast become the system of choice for underwater photographers because of its handling and especially because of its unique Speed Finder, that not only permits metering but (above the surface) rotates 180° for eye- or chest-level viewing. It's the perfect accessory for underwater use, aerial photography or any photography where the eye can't come into direct contact with the Standard Finder. It's one of the five available interchangeable viewfinders for the F-1, each with a uniquely Canon approach to system quality and all but one using the F-1's built-in metering system.

Newbert's home base is on the island of Hawaii, from which he travels frequently for marine assignments all over the Pacific. His work has been published widely and exhibited in numerous photographic galleries, as well as being in demand by clients in need of superior color photography of underwater fauna.

Like many photographers, Chris Newbert has found that only the Canon F-1 system could fulfill his specific needs. If you're in the market for an SLR system that's built for *your* needs, you're in the market for the F-1 system.

- Construction to professional standards insures years of dependable use and smooth operation
- Central area spot metering reads only the center 12% of the finder for unmatched accuracy and selectivity
- Interchangeable viewing systems and eyepiece accessories give the utmost in viewing flexibility
- Motorized options for any action situation
- Nearly 40 Canon lenses for outstanding optical quality and versatility
- More than 200 accessories for unlimited photographic applications







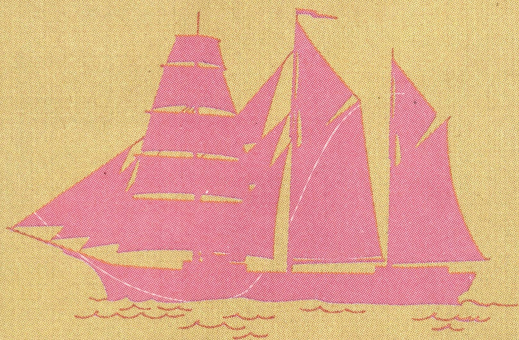
Beneath the chilly waters of New England are forms of marine life whose color, shape and texture provide excitement rivaling anything to be found in more exotic seas. The bizarre-looking sea raven (top), scavenging starfish and algae-covered mussels reward the patient photographer.





# BENEATH NEW ENGLAND WATERS

TEXT AND PHOTOGRAPHY BY JEFFREY L. ROTMAN



**A**long the New England coast the water temperature drops to 0°C (32°F) in the winter and never climbs much above 18°C (64°F) in the summer. It is no wonder, then that scuba enthusiasts generally overlook these waters when seeking new dive experiences. Even veteran New England divers frequently comment upon the bone-chilling cold, the poor visibility, and the unpredictability of these waters.

Despite these drawbacks, diving in New England coastal waters persists and is, in fact, increasing. The challenge is no doubt responsible for some of the attraction. What lies beneath the surface explains the rest.

For many weekend U/W explorers New England's rich marine life is a real drawing card. The animals which live along New England's coastline survive in one of the most extreme marine habitats and many species are unknown to more temperate waters.

Heavy seas pound tidal and subtidal areas mercilessly for weeks at a time. Vertical differences, sometimes as great as 40 feet, separate high and low tide marks. When these tides recede, pools are left in their wake. Such tide pools, actually oceans in miniature, may last six hours before they are swept away by the incoming tide. The tide pool occupants — barnacles, snails, mussels, crabs, and an occasional fish — hint at the wealth of marine life which lies below.

Donning a scuba tank and wetsuit, complete with cold water boots, mittens and hood, will allow a diver to comfortably explore this underwater world from May through October. Winter diving, however, requires a dry suit.


Crabs, lobsters, sea urchins, starfish, and horseshoe crabs are common. Visibility is often less than 20 feet, but for the diver willing to expend the time to seek out the more unusual marine life, the investment is well worth it!

Some of New England's

most fascinating creatures are extremely small and many marine animals are visible only during the winter months. Fortunately, during these months the plankton is greatly diminished and a diver is rewarded with increased visibility. At this time the water takes on a special ice-cold clarity. A diver can view delicate nudibranchs, pink-hearted hydroids, and insect-like amphipods.

On the underside of ledges crimson and violet blood stars, the size of a quarter, crawl over white, yellow and red colored sponges. Like a flourishing flower garden, thick tentacled sea anemones in a variety of pastels sway gracefully in the subsea breeze. Further exploration reveals bright orange tunicates busily working plankton-rich water through their siphons. Horse mussels, their shells splattered with pink coralline algae, open just wide enough to allow a look down into transparent siphons, at the end of which gills are clearly visible.

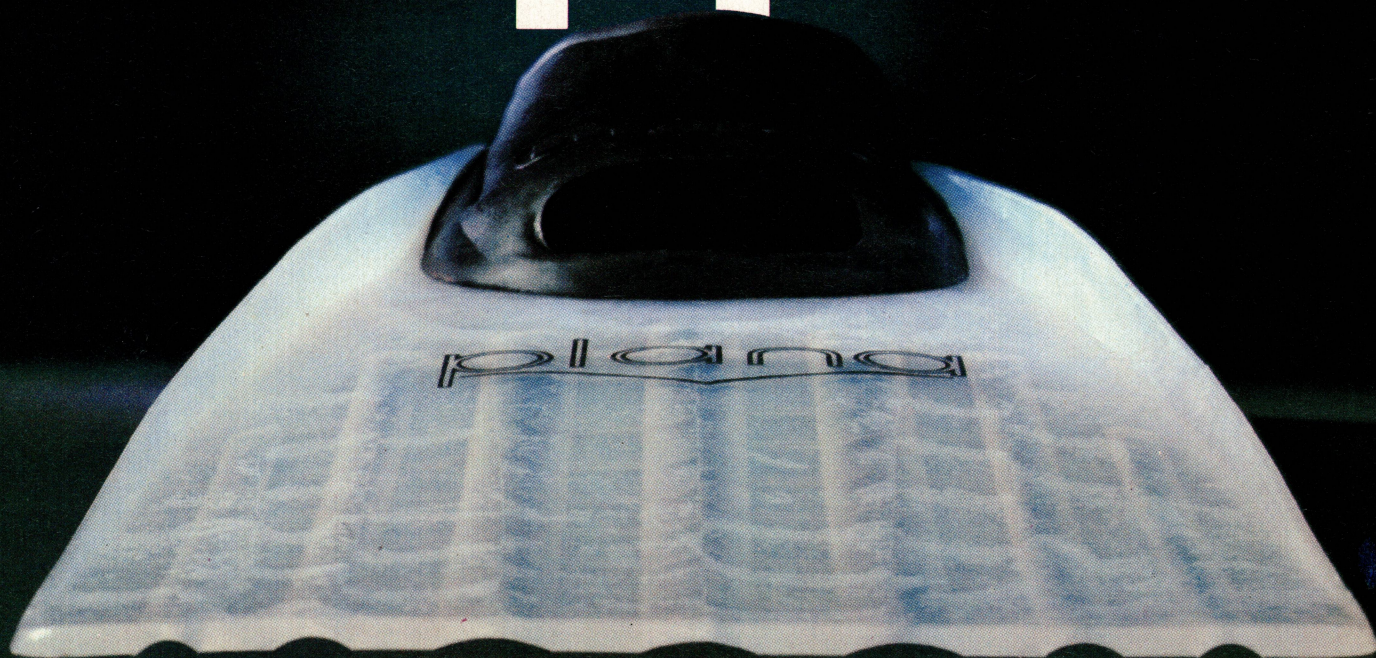
While the tropical fish one associates with warmer oceans are absent in New England waters, the bottom fish are strangely beautiful in their own right. The appearances of some of these border on the exotic and the bizarre. Goosefish wait quietly on sandy bottoms, dangling their anglers, hoping to attract an unsuspecting fish to dinner. Sea ravens, richly colored in vibrant shades of red and yellow, lie motionless on beds of Irish moss. And, the ever-present flounder, with both eyes on the same side of its body, lies quite still.

To discover and enjoy the small scale, subtly colored and well camouflaged marine life of New England requires concentration and patience. Beneath these coastal waters lies marine life whose color, form and texture rivals anything to be found in more exotic waters. Clearly the diver who makes the effort to look won't be disappointed! 



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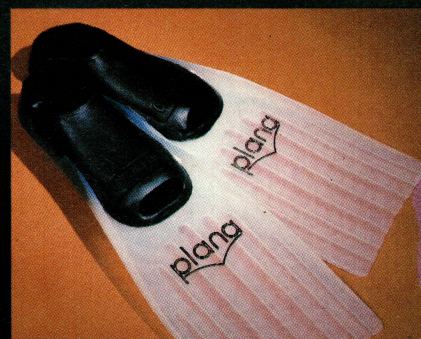
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# Shows'n Events

**September 14-15** San Diego U/W Photographic Society's Annual U/W Film Festival, San Diego Civic Theater, 8 p.m.

**September 14-16** NAUI Divemark '79, Ralph Waldo Emerson Inn, Rockport, MA (Contact: Dan Greenblatt, 29 Athens St., Cambridge, MA 02139)

**Sept. 15** 2nd Vision 360, an Int'l Diving Symposium, State College, Buffalo, NY (Contact: D. Edmiston, Vision 360, PO Box 842, Buffalo, NY 14221)

**October 10** Deadline 9th Annual Innerspace Pacifica U/W Photo Competition (Contact: Innerspace Pacifica '79, PO Box 3061, Honolulu, HI 96802)

**October 13** Seamark '79, 5th Annual fund raising for Cotting School for Handicapped Children, New England Aquarium, Boston, 7:30 p.m. (Contact: Cotting School, 241 St. Botolph St., Boston, MA 02115 or (617-536-9632)

**November 2-3** Innerspace Pacifica '79, Hawaii Council of Diving Clubs, Kaimuki High School Auditorium, Honolulu, 7:30 p.m. (Contact: Innerspace Pacifica '79, PO Box 3061, Honolulu, HI 96802)

**November 9** Innerspace Pacifica '79, Wailuku, Maui (Contact: Innerspace Pacifica '79, PO Box 3061, Honolulu, HI 96802)

**November 10** Innerspace Pacifica '79, Hilo, Hawaii (Contact: Innerspace Pacifica '79, PO Box 3061, Honolulu, HI 96802)

**February 15-17** 1980 21st Banquet Ball, Ohio Council of Skin and Scuba Divers Inc., Chalet Inn, Wapakoneta (Contact: Dan Alstaetter, 8833 Ramsey Rd., Columbus Grove, OH 45830)

## SEA TURTLE CONFERENCE

The World Conference on Sea Turtle Conservation will be held November 26-30, 1979 in Washington, D.C. The conference will assemble an international forum of scientists, conservationists and government officials for the purpose of finding solutions to sea turtle conservation problems.

Persons wishing to attend the conference, to be held at the U.S. State Department Conference Center, should write to: Vivian Silverstein, 1244 - 19th St., N.W., Washington, D.C. 20036. Indicate if you will require hotel accommodations so reservations can be made. Hotels are within walking distance of the State Department.

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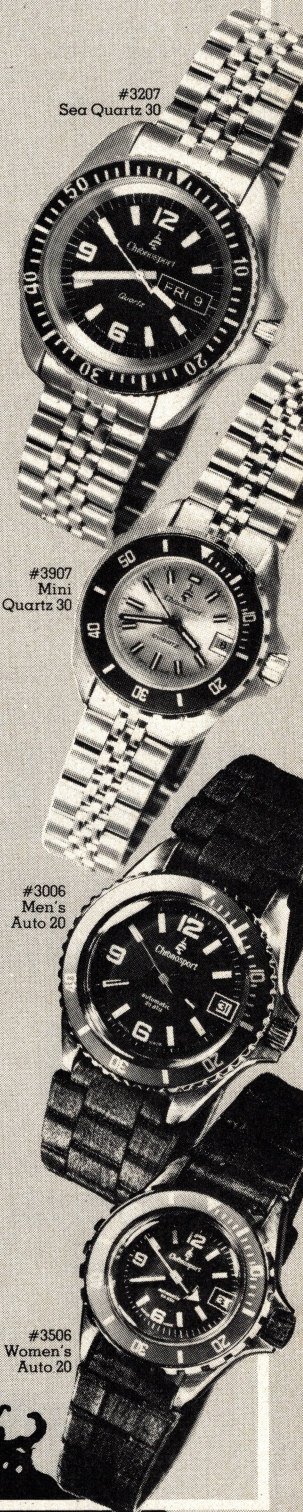
Quality watches at budget prices with stainless steel cases pressure tested to 20 Atms., screw-down crowns, one-way ratcheted bezels and magnificent design. Precision 17 jewel automatic Swiss movements with quick change calendars. Excellent value. *12 Month Limited Guarantee.*

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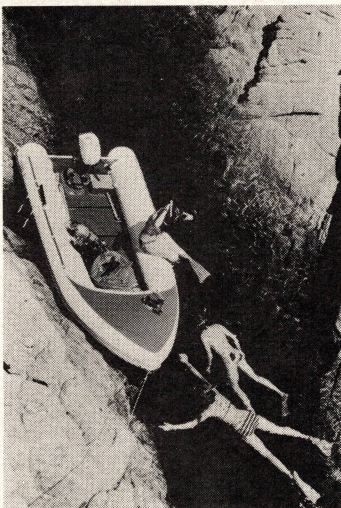


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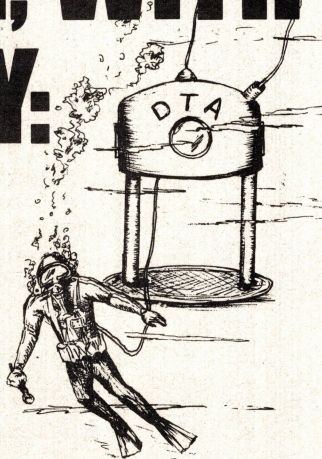


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## IQ<sub>11</sub> STAFF NAMED

The NAUI Diving Association has announced staff appointments for IQ<sub>11</sub>, the Eleventh International Conference on U/W Education.

Homer Krout, NAUI 4638, will be the 1979 program director and Cheri Boone, NAUI 4851, will edit the written record of the convention — the IQ<sub>11</sub> Proceedings.



Jeanne Bear Sleeper, NAUI headquarters special projects director, will serve as conference director.

IQ<sub>11</sub> will be held in Houston, Texas, October 11, 1979. Persons interested in speaking or presenting a paper at IQ<sub>11</sub> should request a copy of *Call For Contributions*, by writing to IQ<sub>11</sub>, P.O. Box 630, Colton, CA 92324.

## ALUMINUM TANKS TESTED

Scuba tanks made of aluminum alloy 6351-T6 resist internal corrosion far better than steel, according to a report recently released by the University of Rhode Island Sea Grant program. This finding is based on a comparison of corrosion tests conducted on the two tank types by URI's Scuba Safety Office, which has investigated scuba accidents since 1969.

Results from the URI tests also indicate maintenance methods for the tanks which can prevent internal corrosion. For steel tanks, the group recommends storing them under minimum pressure, upright if possible. The interior should be checked at least once per year or more often if used regularly.

In the tropics, tanks should be inspected every three months. Aluminum cylinders should also be stored upright under minimum pressure and, if storage is to be lengthy, the valve should be left unscrewed.

In the case of either tank type, if a diver breathes the tank down to 0 psi, water may have entered. For that reason cylinders should be opened, washed out with fresh water and thoroughly dried.

Copies of the report, *Corrosion of Steel and Aluminum Tanks*, are available for \$2 by ordering P 769 from the URI Marine Advisory Service, Narragansett Bay Campus, Narragansett, RI 02882.



# UP CLOSE

WITH THE

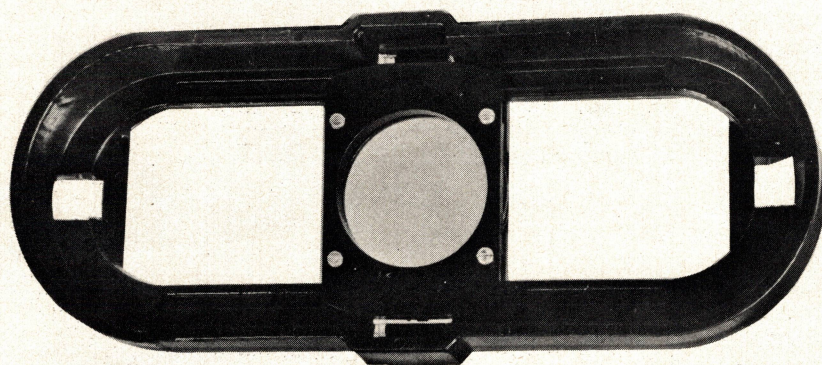
# TRIMCASE

The IKELITE TRIMCASE is designed specifically for the pocket camera. It offers foolproof sealing to depths of 300 feet; or adds a new dimension to boaters, surfers and skiing enthusiasts.

A single control operates both the camera shutter release and film advance. A focus control is provided where applicable, plus an accessory shoe for the addition of our optional #5001-4 Sportsfinder or #5002 Optical Viewfinder. The cover is secured by two quick-release stainless steel fasteners. Handle and underwater flash unit are included.

IKELITE TRIMCASE fits most 110 cameras (without built-in flash), manufactured by:

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CANON  
MINOLTA  
COPAL**



## CLOSE-UP LENS & SHADE

Many 110 cameras will not focus closer than 5 feet, thus photographs must be taken at a distance of 5 feet or more. These distances are too great for optimum underwater photographs. Flash does almost nothing at distances greater than 5 or 6 feet, plus the amount of water between camera and subject results in soft photographs.

The TRIMCASE CLOSE-UP LENS will allow a subject to be photographed as close as 2 feet. Most cameras will be in focus from 2 feet to 5 feet when used

with the close-up lens. This is an ideal distance as the flash can now bring out all the brilliant colors, plus photographing thru less water results in sharper photographs.

The CLOSE-UP LENS AND SHADE snap on the exterior of all IKELITE TRIMCASES, the lens slides in a track for proper positioning. If photographs are desired at a distance greater than 5 feet, simply slide the close-up lens aside and use the camera lens. Lens and shade do not have to be removed to open housing.

  
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**H**ave you ever had 15 or 20 rolls of color slide film processed after returning from an extended diving trip, only to discover that almost every picture you took was incorrectly exposed? An overnight processing service for your first few rolls would have given you invaluable feedback at the time when you needed it, but this service is usually nonexistent at remote resorts.

You can, however, process your own test rolls of Ektachrome color slide film in your room. Once you know that your camera gear is functioning properly, and that your exposures are accurate, you can switch to Kodachrome if you wish, and take the balance of your film home for Kodak to process.

If you do decide to take on the added burden of processing your own color slides, plan those first test rolls carefully. If you don't remember your apertures and strobe-to-subject distances, you won't learn much. Force yourself to take the first six to nine shots on each roll very methodically. Choose a stationary subject and bracket your exposures the same way each time.

#### THE KODAK PINT E-6 KIT

The kit, in the original Kodak package, weighs slightly less than five pounds, measures 6.5 x 7 x 9.5 inches, and contains enough concentrated chemicals to process up to eight rolls of 35mm, 36 exposure Ektachrome. The film is processed two rolls at a time in a pint-size, daylight developing tank (not furnished with the kit).

If you are new to processing or if you fared poorly in your high school chemistry class, the contents of the kit could, at first glance, generate fear in your heart. But the E-6 process is deceptively simple — especially when compared to the previous E-4 processing system. If you can follow cookbook instructions, you can process your Ektachrome color slides. There is no artistry to it — only *explicit adherence* to step-by-step instructions.

Twelve pages of clear, complete directions are packaged with the kit, so we won't parrot the Kodak instructions word for word in this article. Rather, we will give you an overview of the processing procedure so you can decide if you wish to invest your time and money in the system, and will point out some of the short cuts and special considerations (not covered in the directions) for the traveling U/W photographer.

#### MIXING AND STORING CHEMICALS

You will need seven containers that will hold at least one pint each, a method of measuring exactly one pint in these containers, and fresh water. If the water

in your room is brackish, get a few gallons of fresh water from the resort kitchen. All of the concentrated chemicals are in liquid form. You fill the pint containers part way with water, pour in the chemical slowly, and then fill to exactly one pint. Note: Kodak's directions specify the initial amount of water in ounces, but we have "eye-balled" these measurements with good results. If you don't have a stirring rod, carefully swirl the contents while slowly adding the concentrate. Be especially careful not to add the color developer (part B) too quickly.

While glass containers allow you to see the contents clearly, and allow faster temperature adjustment, they are too fragile and cumbersome to pack for traveling. Collapsible, plastic containers — that are light and easy to pack — are available at camera stores. However, if sending your kids or spouse on a scavenger hunt through the resort's trash cans doesn't embarrass you, any bottles that can be cleaned will do, providing that their necks are wide enough to allow you to pour liquids in and out easily. Pieces of plastic bag held over the tops with rubber bands will do in place of lids.

Once mixed, the chemicals can be kept for several days. But don't plan on keeping chemicals in large, half-filled bottles for more than a few days in warm climates. Kodak's recommended life-span for each chemical, under various conditions, is included with the directions.

You must be able to label each container. Avery labels and pencil marks covered with clear, plastic tape survive hot water amazingly well, and so will masking tape and ballpoint pen. With transparent containers, include a mark to show the correct liquid level for one pint. Note: The bleach bottle contains eight ounces, and two bleach bottles of water could be used to establish the pint level. The point is to go prepared — it may even be difficult to find a pencil in some resorts!

#### LOADING THE TANK

You will need two film reels, a pint developing tank, a bottle opener (church-key type), scissors, and either a dark bag or a darkened room. The film cassettes are opened with the bottle opener, the film leaders are cut off with the scissors, the film is threaded onto the reels, and the reels are placed inside the developing tank — all in total darkness.

A stainless steel tank and reel set are your best choice because a pint of chemicals will completely cover both reels of film. Most of the plastic tank and reel systems we've seen require slightly more than a pint of liquid to completely cover the top reel — even though some of these were described as being "pint tanks" by the salesperson. Thus, a plastic tank may limit you to processing only one roll (on the bottom) of film at a time with the pint E-6 kit. If you have a plastic tank, experiment with a pint of tap water to see if both reels (without film) are covered.

(Continued on Page 34)



By following simple, step-by-step instructions, you can process your own test rolls of Ektachrome color slide film. Take your test exposures carefully and make notes on apertures and distances.

## PROCESS YOUR COLOR FILM ON LOCATION

A chance to check before that  
special trip is just a memory

by Jim and Cathy Church







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## SEA QUEST I

Joe Bergan, president of Michigan City Scuba, Inc., a PADI sanctioned training facility, and Ernie Piotrowski, owner and captain of *Sea Quest I*, have announced the addition of their 26 foot custom dive boat for wreck diving charters out of Michigan City, Indiana.



*Sea Quest I* was custom-built in San Diego, California, expressly for divers. It has a wide swim platform with an in-water ladder for easy boarding of fully geared divers. Electronic equipment includes RDF, side-scanning sonar and flash/graph recorder for wreck locating, and ship-to-shore radio for constant communication with the dive shop. Oxygen is carried for diver safety. Cockpit spreader lights and U/W diver-return strobe light for night dives complete the outfitting.

Capable of handling six divers with a crew of two, the boat carries 170 gallons of gas for range. It is inspected and licensed by the USCG, the states of Indiana and Michigan, and carries all required safety equipment. Dive charter trips are made from June through September.

For dive charter schedule with rates and colorful brochure, write: Michigan City Scuba Center, 2519 East Michigan Blvd., Michigan City, Indiana 46360. ✉

## NAUI CERTIFIES THREE-QUARTER MILLION

NAUI, the National Association of Underwater Instructors, has announced that 750,000 divers have completed one of its training certification programs. According to NAUI representative Jeanne Bear Sleeper, the number of NAUI certified divers becomes an especially noteworthy event when considered in light of the length and intensity of NAUI courses.

NAUI's motto: "Safety Through Education" is the guiding philosophy behind all levels of instruction. Today NAUI offers over 20 different certification courses for divers who want to continue their education. For more information about diving or instruction courses, write NAUI, 735 Colton Avenue, Colton, CA 92324. ✉

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A dark bag is made of black material, has a special light-tight zipper and has openings for your arms. You open the cassettes and load the reels and tank with your hands and equipment inside the bag. However, in humid climates, your hands and the film may become damp with perspiration which can damage the film emulsion and make it almost impossible to load the film onto a stainless steel reel.

You may be able to darken the closet or bathroom enough for film loading at night. Sit in the darkened room for at least five minutes to let your eyes adjust to the dark. (Some friends may think that this behavior is peculiar, but they'll show envy when they see your processed slides.) If you can see your hands, the room isn't dark enough. A buddy can hold a blanket over a door or window for the few minutes it takes you to load the film. Very small light leaks around the door won't affect your film if you keep your back to the door and shield the film so that no light strikes it. Once the loaded reels are safely inside the closed developing tank, you can turn on the lights.

Practice loading film on reels ahead of time at home! Perhaps the camera store has some out-of-date film which it will give you without charge or sell very cheaply. You won't be taking pictures with this film — it is for practice: Open the cassette with the bottle opener, trim the leader and practice loading the film on the reel in daylight so you can see what is happening. Practice until you can load the film quickly and correctly with your eyes shut. If the layers of film buckle on the reel, the pictures will be ruined wherever the layers of film touch.

#### GETTING CHEMICALS TO TEMPERATURE

Use a hot water bath to get the seven containers of chemicals and the wash water up to temperature. The first developer must be within a half degree of 100° F, the color developer must be within two degrees of 100°, and the other chemicals and wash water must be between 92° and 102°.

If your sink isn't large enough, use a plastic dishpan, the bathtub, or even your water-tight camera case. You will be adding hot water to maintain temperature, so you must be able to drain or bail water from the bath. You will also need at least two quarts of *clean* fresh water for the washes. A small waste basket can be used to hold the wash water, but it must be cleaned thoroughly.

It will take 15 or more minutes to get the water bath and chemicals stabilized at the proper temperature. Don't rush this step! Let the thermometer sit in the first developer long enough to provide an accurate reading.

#### PROCESSING THE FILM

Processing is the easy part. You will pour chemicals from the storage containers into the developing tank, and back from the tank to the containers, at the time intervals given in the instructions. You can do this with the lights on because the daylight-type developing tank has light-tight baffles built into the lid. Allow time to pour out the chemicals, and let the tank drain for ten seconds before the time for each step is up. Practice this ahead of time (without film) with ordinary water before you mix the chemicals.

Timing is important — especially with the first developer. Use a stop watch, a timer, or have a buddy keep time during

the processing. But if you work together, *don't talk!* It is too easy to lose track of how many minutes went by. We have our timing instructions recorded on a tape cassette. Our tape begins, "Prepare to pour the first developer . . . Pour now . . ." Kodak also supplies a tape cassette — the Kodaword™ Darkroom Audio Cassette — which "talks you through" E-6 processing. The tape system is great, if you have a miniature cassette player. And if you get behind, don't panic. With most steps — other than the first developer — you can turn the tape off (or stop timing) and leave the chemical in the tank for a few extra moments if you're confused.

No parties during processing! It only

## ON LOCATION



Materials needed for E-6 processing: the contents of the Kodak E-6 Pint Kit, plus a daylight-type developing tank, one collapsible container, scissors, Ektachrome 64 film box, two 35mm film reels, can opener and clothes pin. Chemicals (right) are poured into the daylight tank. Also be sure to practice loading the film reel (far right).



takes 37 minutes, so kick everyone out. No kids, no beer and no reading.

### DRYING THE FILM

After processing, remove the film from the reels and hang it up to dry. The drying area must be dust free — the bathroom is usually the best location. Keep the door and window shut, and try to keep traffic in and out of the room to a minimum because air currents carry dust. A lady's hosiery hanger can be used to suspend the film from the shower curtain rod. These hangers have a clothes pin at one end and a clothes hanger hood at the other end. Use additional clothes pins to weight the lower ends of the film to prevent the strips from curling.

Avoid the temptation to handle and inspect the film while it is still wet. The emulsion is soft, and you can't repair a nick or scratch in its surface. Don't panic: Until it is completely dry, the film will appear to be underexposed and will have a yellowish color cast. Drying should take a couple of hours, but you can dry the film with a hair dryer (warm, not hot air) in about 10 or 15 minutes.

### CUTTING AND STORAGE

Commercial negative files are your best bet for protecting your processed film. Cut the strips into length of no more than six frames each, and insert these short strips into the negative files. Merely placing the short strips into an envelope

is easier and cheaper, but the strips could rub together and scratch — especially if loosely packed in a vibrating aircraft during the trip home.

Be careful when handling the unmounted film — hold it by the edges only! If dust particles dried on the emulsion, don't try to wipe them off with commercial film cleaner and cotton. Soak the film in stabilizer (one of the processing chemicals) for about five minutes, and then gently try to wipe the particles off with a fingertip. And when you get home, carefully cut your best slides from the strips and mount them in plastic or cardboard slide mounts which are available at most camera stores.

### TRANSPORTING THE E-6 KIT

If you are driving to the dive location, transporting the E-6 kit poses no problems, assuming that you have packed the glass containers carefully. But if you are flying to a distant resort, there could be a problem. Kodak recommends that you ship the E-6 kit — by surface transportation — to the resort ahead of time. Because the chemicals are marked "hazardous," the FAA takes a dim view of your carrying them aboard an aircraft, and the chemicals can't be mailed with the U.S. Post Office.

We recommend writing to the tourist department of the area where you intend to travel and ask for the names and addresses of the local camera shops. If they don't stock E-6 kits, you may be able to arrange to have an E-6 kit ordered and waiting for you, but begin your negotiations months ahead of time. Some photo stores near international airports have experience in shipping photographic chemicals. Mileo Photo Supply, 2105 Ponce De Leon Blvd., Coral Gables, FL 33134, for example, has experience in shipping E-6 chemicals to Caribbean locations, and has shipped E-6 chemicals to Grand Cayman, BWI, for us on several occasions.

### CONCLUSION

Now that you have an overview of E-6 home processing, we strongly recommend that you purchase a kit and practice at home before attempting to process in the field. As for costs, here are some average prices (which will vary with quality and location): two reels and a tank, \$12.00; collapsible containers, \$2.95 each; dial thermometer, \$19.95; dark bag, \$11.95; magnifying lupe, \$3.95 or more; E-6 Kit, \$17.40; negative files, \$0.25 each; and Kodak slide mounts are \$3.75 for a package of 100. We assume you already have most of the other items, such as scissors, can opener, clothes pins or hosiery hangers.

photography by Jim and Cathy Church



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For more information on the sale or rental of *Texas Diving*, contact: Tom Hurst and Associates, 7812 Longfield Dr., Ft. Worth, TX 76108.

## PADI COLLEGE SILVER COURSE

PADI International College has introduced a Silver Instructor course, designed to fill the training gap between the 10 week Gold Instructor and the traditional one week Instructor Training Course (ITC).

The goal of this new course is to provide open water instructors who are specialists in underwater photography, search and recovery, rescue diving, and equipment repair. Graduates will be certified CPR, first aid, and advanced lifesaving instructors by the American Red Cross and will receive training in retail dive store operations and management. Placement assistance will be offered. Courses will convene each month. Graduates will also become associate members of the PADI International College Alumni Association.

If an applicant is a certified divemaster, the required course is two weeks long, and the tuition, \$880. For those who are not divemasters, an additional one week divemaster course will be given preceding the two week course. The tuition for this one week course is \$250.

Divers interested in these courses should write to PADI International College in California, Inc., 1310 Rosecrans St., San Diego, CA 92106.

# Instructor Training Courses

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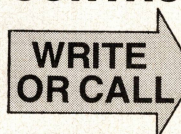
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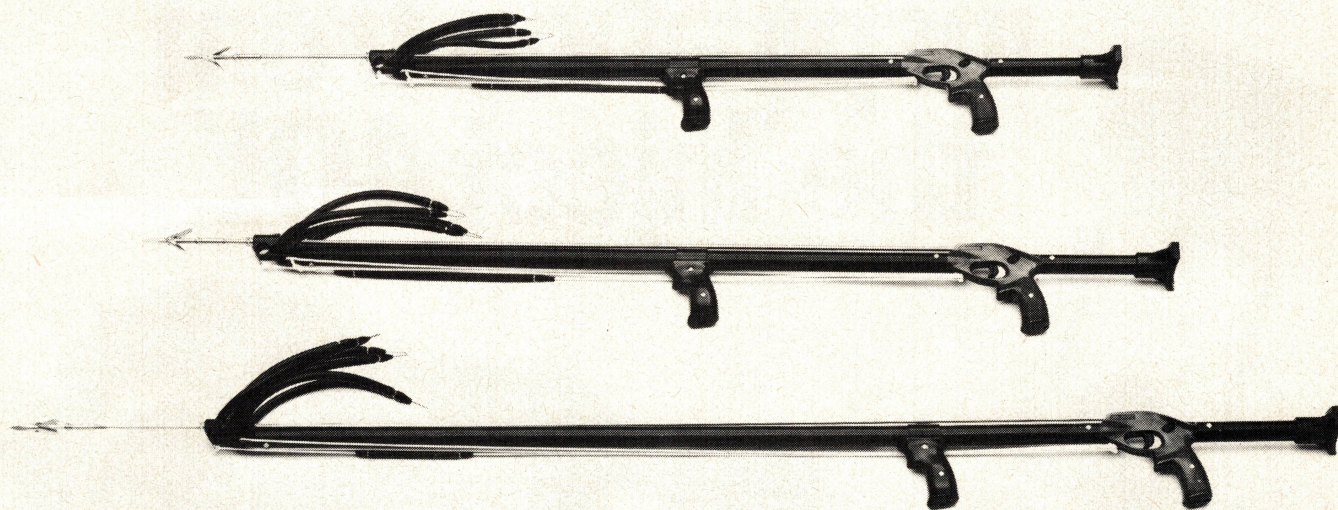
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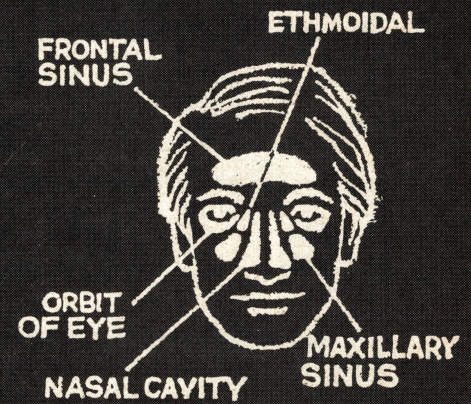
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# SDM SCUBA QUIZ



## Category: Sinus Problems

By Dennis Graver

The sinuses are a source of concern and possible discomfort for many divers. An understanding of their structure and how pressure affects them can increase diving comfort and safety. Test your knowledge of the sinuses by answering the following questions. Answers are on the next page.

### 1. Sinuses are best described as:

- ☐ A. Flexible air spaces in the head
- ☐ B. Rigid air spaces in the head
- ☐ C. Enlarged areas in certain arteries
- ☐ D. Mucus producing organs in the head

### 2. How many pairs of sinuses does a person have?

- ☐ A. Two
- ☐ B. Four
- ☐ C. Six
- ☐ D. Eight

### 3. Pressure equalization of sinuses is normally achieved:

- ☐ A. By blowing against closed mouth and nostrils
- ☐ B. By swallowing, yawning, or wiggling the jaw
- ☐ C. By transfer of pressure by blood in capillaries
- ☐ D. Automatically through normal breathing

### 4. A sinus squeeze during descent can cause hemorrhaging due to:

- ☐ A. The sinus being compressed by increased external pressure
- ☐ B. Rupturing of capillaries from insufficient internal pressure in the sinus
- ☐ C. Failure of the diver to exercise proper clearing techniques
- ☐ D. None of the above

### 5. Diving with a cold is:

- ☐ A. Acceptable
- ☐ B. Acceptable with proper medication
- ☐ C. Permissible to 30 feet or less
- ☐ D. Unacceptable

### 6. Medication taken to relieve sinus congestion:

- ☐ A. Can open sinus passages to allow diving activities
- ☐ B. Can cause increased congestion when effects wear off
- ☐ C. Is recommended for divers with colds or sinus problems
- ☐ D. A and B, but not C are correct

### 7. A symptom of a sinus squeeze is:

- ☐ A. A general ache in the head
- ☐ B. An intense pain in one area
- ☐ C. A stuffy feeling during descent
- ☐ D. A pulling sensation on the eyes

### 8. Draining of the sinuses is achieved by:

- ☐ A. Gravity, which affects all sinuses
- ☐ B. Gravity, which affects all sinuses except one pair
- ☐ C. Wavelike action of hairlike projections in all sinuses
- ☐ D. Wavelike action of hairlike projections in all sinuses except one pair

### 9. Bleeding from the nose following a dive probably indicates:

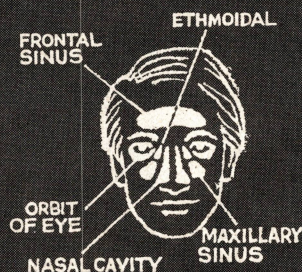
- ☐ A. The person should not be a diver
- ☐ B. The diver has been assaulted
- ☐ C. Sinus injury has occurred
- ☐ D. Professional medical treatment is mandatory

### 10. Sinus problems during ascent are:

- ☐ A. Common and easily relieved
- ☐ B. Uncommon and easily relieved
- ☐ C. Common and difficult to relieve
- ☐ D. Uncommon and difficult to relieve



# SDM SCUBA QUIZ



## Answers: Sinus Problems

**1. B. Rigid air spaces in the head.** The exact purpose of the sinuses is not understood, but it may be to reduce the weight of the head. The sinuses are membrane-lined cavities within the skull which are connected to the nasal passages by small openings.

**2. B. Four.** The paranasal sinuses consist of the frontal sinuses (above the eyes), the smaller sphenoid and ethmoid sinuses (behind the eyes), and the maxillary sinuses (inside the cheekbones).

**3. D. Automatically through normal breathing.** The sinuses are connected by narrow openings to the nasal passages. With normal, healthy sinuses, equalization techniques are not required while diving. Head first descents can make sinus equalization more difficult, however, than feet first descents since increased blood pressure in the head enlarges the capillaries in passageway linings.

**4. B. Rupturing of capillaries from insufficient internal pressure in the sinus.** Increasing external pressure on a sinus without increasing internal pressure creates a pressure imbalance. This causes capillaries in the sinus membrane to bulge into the cavity. If the sinus cannot be equalized normally, the capillaries will finally rupture and fill the cavity with blood.

**5. D. Unacceptable.** Mucous membranes in the sinuses swell and discharge during a cold. Swelling of the air passageways and resulting congestion causes equalization to be difficult or impossible. Other effects of a cold also contribute to the inadvisability of diving activities.

**6. D. A and B, but not C are correct.** Medication taken to relieve sinus congestion can open blocked passages, but a "rebound" effect may occur when the medication wears off. This causes an even greater restriction of air movement than before. Should the effect of sinus medication subside underwater, where drugs function differently due to pressure, the rebound effect could cause high pressure air to be trapped within the sinus cavity during ascent, causing pain and injury.

**7. B. An intense pain in one area.** Divers who have experienced sinus squeeze often describe the pain as "like an ice pick stuck into my head." The most frequent complaints are about the frontal sinuses above the eyes.

**8. B. Gravity, which affects all sinuses except one pair.** The maxillary sinuses inside the cheekbones do not drain by gravity unless inverted. Divers who get water up their noses may fill these sinuses with water. Lowering the head will allow the water to drain and run out of the nose. Divers sometimes experience this when they bend over after a dive and wonder where the water comes from.

**9. C. Sinus injury has occurred.** A small amount of blood from the nose is not uncommon with new divers and is not serious. For severe, prolonged, or repeated bleeding following dives, a diving physician should be consulted to determine the cause of the problem.

**10. D. Uncommon and difficult to relieve.** Usually, sinus problems occur during descent and the pain causes the diver to abort the dive. If air can get into the sinus to equalize the space, it can probably escape during ascent. Should sinus pain occur during ascent, slow or stop the ascent to allow the air inside the sinuses to work its way out.

*Many divers use some sort of medication to clear the sinuses for diving. Be sure to gain approval from a diving physician prior to adopting this practice and make certain any drug used does not cause side effects, such as drowsiness. Test the medication on land before using it for diving. Diving without use of drugs is preferred and should be possible for normal, healthy divers. May the water and your sinuses be clear for all your dives!*



# IT'S YOUR FUTURE

Don't be misled by commercial diving schools who claim to be best or #1 just because they have certain equipment or have been in operation X years. Anyone can make such claims, but, proving it's another matter. At D.I.T. we don't make claims. We let our reputation do that. Check us out. Compare our credentials to the others. Judge for yourself who's best qualified to train you right. It's your decision and it's your future.

Eleven years ago D.I.T. started with no approval or recognition from any local, state or federal agency. Today we are approved by virtually all agencies who are involved in vocational education. D.I.T. is accredited by the accrediting commission of The National Association of Trade and Technical Schools. Other approvals and memberships include . . .

**Approved by:**

Department of Health, Education & Welfare (HEW)  
The Council on Post Secondary Accreditation (COPA)  
Veterans Administration  
Social Security Administration  
Comprehensive Employment & Training Act (CETA)  
Department of Vocational Rehabilitation (DVR)  
Bureau of Indian Affairs (BIA)  
Washington State Commission for Vocational Education for Veterans Training

**Member of:**

National Association of Trade and Technical Schools  
Association of Commercial Diver Education (ACDE)  
Association of Diving Contractors (ADC)  
Institute of Diving (IOD)  
Washington Association of Trade and Technical Schools (WATTS)  
Chamber of Commerce of the United States  
Better Business Bureau (BBB)

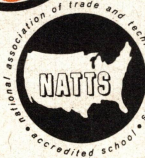
D.I.T. was founded and is staffed by men who know how to train you to work efficiently in and around the sea. Our record of training excellence allows employers to hire our graduates with confidence.

Send \$2.00 for our catalog. See how to enroll in a highly sophisticated six-month professional deep sea diving course which covers all facets of the industry. Our catalog contains full disclosures including course outline, employment statistics, instructor qualifications, tuition refund policy, standards of progress, financial assistance available, etc. An eligible institution for student loans and grants. Write today for details.

# D.I.T.

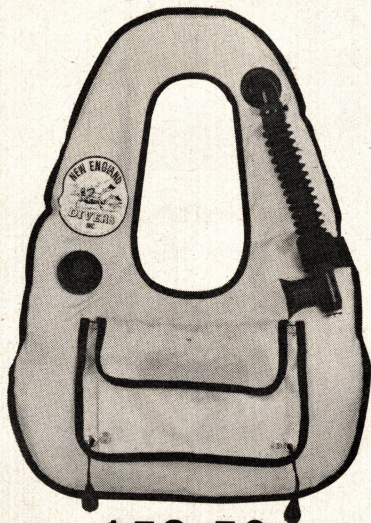
DIVERS INSTITUTE OF TECHNOLOGY, INC.

1133 N.W. 45TH ST. • DEPT. SDM 7  
P.O. BOX 70312 • SEATTLE, WA. 98107  
(206) 783-5542





## New England Divers July Bonus

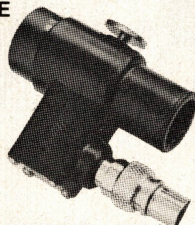


**\$59.50**

plus shipping

**B.C. EXPLORER VEST.** The Buoyancy Compensator...the new word in vest design. A soft corrugated oral inflation hose allows effortless underwater buoyancy control. Nylon outer shell contains inspectable vinyl inner bag. Stainless steel hardware. For safety a 1½ lb. over pressure relief valve of exclusive non-leaking design is provided. Net buoyancy approximately 40 lbs. Color is Safety Yellow. Only \$59.50 plus shipping cost.

...OR CHOOSE THE  
**B.C. EXPLORER  
VEST WITH THE  
BUOYANCY  
COMPENSATOR  
INFLATOR**



**\$78.50**

plus shipping

### NEW 1979 88 PAGE CATALOG

is ready at all of our Retail Stores...or request it from our National Catalog Division. Great bargains! Only \$1.00 per copy.



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(617)922-6951

2945 N.E. Second Ave.  
Miami, Florida 33137  
(305)573-4600

9820 Dixie Highway  
Kendall, Florida 33156  
(305)667-4622

#### NEW ENGLAND DIVERS CATALOG DIVISION

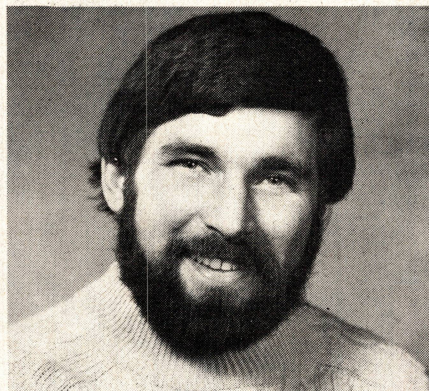
107 Tozer Road, Beverly, Mass. 01915  
Telephone (617) 922-6970

Underwater life support systems are potentially dangerous to a non-trained user. These include scuba tanks, regulators and buoyancy compensators. This ad does not constitute an offer to sell these items via mail order.

## AMIDON JOINS NAUI STAFF

The National Association of Underwater Instructors (NAUI) announced recently that Walter L. Amidon has accepted the position as NAUI Industry support director.

Walt has an extensive background in dive store operation. He owned and managed a store for several years prior to managing Underwater Sports, in Seat-



tle, Washington. In addition to his responsibilities as store manager, Walt is an active instructor. From 1967 to 1971, he served in the US Navy and trained at Underwater Demolition School.

Walt will primarily be responsible for development and promotion of NAUI dive store and school support programs. His experience in store management, inventory control, sales, buying, instruction, and servicing major line regulators and tanks will be valuable. NAUI stores and schools can look forward to excellent support service from Walt and NAUI Headquarters.

Walt can be contacted at NAUI Headquarters, P.O. Box 630, Colton, CA 92324. Phone (714) 824-5440.

## ESPIRITU MANAGES KIHEI SEA SPORTS

Antonio Espiritu has been named



manager of Kihei Sea Sports, a dive shop in Maui, Hawaii. An eight year resident of Maui, Espiritu is a PADI instructor and U.S. Coast Guard licensed captain.

## Instant Survival

For the U.S. Coast Guard the Henderson Zip-On Exposure Suit can mean survival, but for the sport diver it means comfort. Comfort under the water and out of the water. Open the full length zippers on arms, legs, and on the jacket's side and you wear your suit like loose clothing. Pull the zippers down and it becomes a form-fitting wet suit.

Unique and stylish, the patented\* Zip-On suit features pockets, sheath, Velcro tabs, triple seams, 3 colors, ¾" or ¼" Rubatex G231, custom cut or stock sizes, and it's backed up with the fastest delivery in the industry.

\*U.S. Patent No. 3,771,169



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02827





# DIVE FLORIDA!

Yes, Florida has it all—coral reefs, drift dives, crystal clear springs, and much, much more! And wherever you dive in our beautiful state, a PADI Training Facility can provide dive site and accomodation information, charter boat or vacation packages, equip-

ment, service, air fills, or advanced diver education—year 'round! Choose the facility in the area you wish to dive and give a call before you arrive—we'll be glad to give you a refresher course or environmental orientation, and then show you diving's best—in sunny, exciting Florida!



**1** 3\* Aquatics Etc., Inc. S-379  
2767 US Hwy 19 N.  
Clearwater, FL 33515  
(813) 796-0666

**2** Buddy's Northside Sporting Goods  
& Scuba Center S-380  
220-D W. Tharpe Street  
Tallahassee, FL 32303  
(904) 385-0874

**3** Captain Bill Crawford's Tropic  
Isle Dive Shop S-326  
P.O. Box 755 MM 103.5  
Key Largo, FL 33037  
(305) 451-1063

**4** Coral Reef State Park  
Concession S-348  
P.O. Box 13-M  
Key Largo, FL 33037  
(305) 451-1621

**5** Diveco Diving Systems S-317  
1212 23rd Street  
Vero Beach, FL 32960  
(305) 567-8545

**6** 5\* Divers Den South S-373  
12614 N. Kendall Dr.  
Miami, FL 33186  
(305) 595-2010

**7** 5\* Divers Unlimited, Inc. S-301  
4231 Hollywood Blvd.  
Hollywood, FL 33021  
(305) 981-0156

**8** Divers World S-366  
2525 Lake Drive  
Riviera Beach, FL 33404  
(305) 844-1510

**9** 5\* Florida P.A.D.I. College S-330  
4593 St. Johns Avenue  
Jacksonville, FL 32210  
(904) 388-4689

**10** Ginnee Springs, Inc. S-391  
Rt. 1 Box 153  
High Springs, FL 32643  
(904) 454-2202

**11** Key Largo Diving Headquarters  
S-393  
Rt. 1 Box 293  
Key Largo, FL 33037  
(305) 451-1151

**12** 5\* Lauderdale Diver S-378  
1334 S.E. 17th Street  
Ft. Lauderdale, FL 33316  
(305) 467-2822

**13** New England Divers S-311  
2945 N.E. 2nd Avenue  
Miami, FL 33157  
(305) 573-4600

**14** North Florida Sports World  
S-389  
Rt. 7 Box 52 US 90 East  
Lake City, FL 32055  
(904) 752-2473

**15** 5\* Ocean Sports S-397  
129 Miracle Strip Parkway  
Ft. Walton Beach, FL 32548  
(904) 244-7681

**16** 3\* Pisces Divers, Inc. S-388  
14328 Biscayne Blvd.  
N. Miami Beach, FL 33181  
(305) 944-2310

**17** Port Paradise Marina S-399  
P.O. Box 516  
Crystal River, FL 32629  
(904) 795-3111

**18** 5\* Professional Diving Schools  
of Florida S-342  
210 N. Federal Hwy  
Deerfield Beach  
1540 N. Federal Hwy  
Pompano Beach  
Bahia Mar Yachting Center (AIA)  
Ft. Lauderdale, FL

**19**

**20**

**21** Quiescence Diving Services,  
Inc. S-390  
Box N-13 MM 101.5  
Key Largo, FL 33037  
(305) 451-2440

**22** Seapro Scuba Center S-374  
3619 Broadway  
Riviera Beach, FL 33404  
(305) 844-DIVE

**23** U.S. Aquanauts S-325  
677 S.W. 1st Avenue  
Miami, FL 33130  
(305) 545-9000

**15** Ft. Walton Beach

**2** Tallahassee

**14** Lake City

**10** High Springs

**9** Jacksonville

**17** Crystal River

**1** Clearwater

**5** Vero Beach

**8** Riviera Beach

**22** Deerfield Beach

**18**

**19** Pompano Beach

**20** Ft. Lauderdale

**12**

**7** Hollywood

**23** Miami

**16**

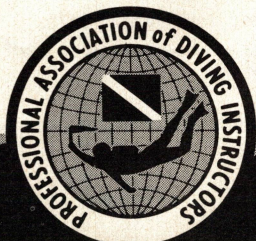
**6**

**13**

**11**

**4**

**21** Key Largo



**PADI** TODAY'S LEADER IN DIVER EDUCATION



# Honest Archie says: "I'm tougher on what I sell than you are."

That's how I've stayed the number one source for the finest equipment at the lowest price, for 27 years.

I back everything I sell. So it must be torture-tested for durability, reliability, and value. If it can't take the beating I give it, I won't sell it.

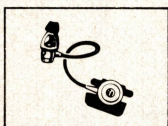
My kind of tough thinking fills our warehouse with only top-quality gear. The biggest selections you'll find anywhere. All warranted by leading manufacturers and quality-assured by me. All ready for immediate shipment, without substitutions. And all at my famous low, low prices.

If you're as tough on your gear as I am, does it make sense to shop any other way? Rush me your order. I'll ship it the same day.

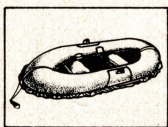


## Send or bring to Central Skindivers

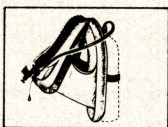
2608D Merrick Road  
Bellmore, New York 11710



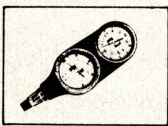
**GREAT REGULATORS.**  
☐ Conshelf Supreme. Navy approved. Silicon enclosed 1st stage. **\$119.**  
☐ Cyklon 300. Easiest breathing. **\$144.**



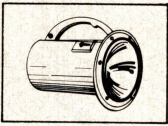
☐ 8 ft. Inflatable **2-MAN BOAT.** Heavy-duty & fast-inflating. Brand new, not surplus. Packs small. **\$69.**



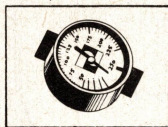
☐ **STABILIZING B.C.** Surrounds you with buoyancy. CO<sub>2</sub>, oral & low pressure scuba inflation. Best kam-action bac-pac. **\$169.**



☐ **LUMINOUS COMBO GAUGE.** 150ft or 250ft depth gauge and 4,000 psi tank pressure gauge. Fine precision instruments. **\$84.**



☐ **POWERFUL LIGHT.** Good to 400ft. Rugged metal housing. 10 batteries (not included). Failsafe magnetic switch. **\$42.**



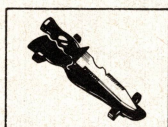
☐ **DEPTH GAUGE.** 150 ft. or 250 ft. Oil filled. Precise. Luminous. Shock-protecting rubber case and wrist strap. **\$32.**



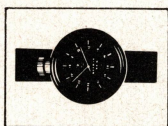
☐ **SEIKO WATCH.** 17-jewel, self winding, auto date, amazing quality. Tested to 492 ft. One year guarantee. **\$139.**



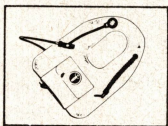
☐ **NYLON TWO SIDES 1/4" SUIT.** 5 zippers, stitched seams **\$109.**  
☐ **NYLON TWO SIDES 1/4" FARMER SUIT.** Double warmth. **\$129.**



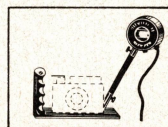
☐ **DACOR BLUNT TIP COMBO KNIFE.** 2 saw-tooth areas on super-sharp smooth blade. Stainless. Rubber sheath. **\$29**



☐ **BOTTOM TIMER.** Times dive precisely up to 60 minutes. Starts and stops automatically by water pressure. An important aid. **\$42.**



☐ **U.S.D. BC III.** New, 1979 Cordura B.C. Lever dump. 38gm CO<sub>2</sub>. Low pressure scuba inflator. Whistle. In 52 or 38lb lift. **\$100.**



☐ **STROBE OUTFIT** for Nikonos II or III. Strobe, arm, handle, tray, quick-trigger. Wide angle. Fast recycle. To 250 ft. Foam lined carry case. **\$249.**



☐ Get Honest Archie's 1979 catalog. Over 600 pieces of the finest equipment at special prices, plus free patch & decal. **\$1.**

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Cut on dotted line or copy this page. Check off the items you want. Archie pays shipping & insurance unless otherwise noted. Specify BC lift; height, weight, waist, chest & hip dimensions for suits; 150ft. or 250ft. for gauge; Nikonos II or III for strobe. Enclose check, money order, or charge information.

Amount enclosed \_\_\_\_\_  
N.Y. Residents add sales tax. Minimum charge order \$50.

Name \_\_\_\_\_

Address \_\_\_\_\_ Apt \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone ( ) \_\_\_\_\_

☐ American Express ☐ VISA  
☐ Master Charge Exp. date \_\_\_\_\_

Number \_\_\_\_\_

Signature \_\_\_\_\_

Prices guaranteed until Sept. 1, 1979.

Central is a PADI 5-star and I.T.C. facility. Lessons for beginner through instructor.

FOR RUSH ORDERS  
CALL TOLL-FREE  
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EXCEPT FROM N.Y., ALASKA  
& HAWAII—(516) 826-8888

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160-09 Jamaica Avenue, Jamaica, N.Y. 11432 • (212) 739-5772 • Open 6 days  
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Because scuba tanks, regulators and buoyancy compensators are potentially dangerous to untrained users, this ad does not constitute an offer to sell these items to non-certified divers via mail order.

FOR RUSH ORDERS  
CALL TOLL-FREE  
**800**  
**645-4724**  
EXCEPT FROM N.Y., ALASKA  
& HAWAII—(516) 826-8888



# WANTED



## underwater photographs

The worldwide search is on for diving's finest underwater pictures. The PADI Training Facilities' Underwater Photography Search Competition needs exciting photographs for PADI's fine magazine, *The Undersea Journal*, and to lead the photography exhibition at Underwater Photo Expo '80 (Long Beach, California, February 1980). Submit your photographs to a participating PADI Training Facility today — as many as you like. Here's your chance to be published and to win big prizes!



### Competition Rules

1. The PADI Underwater Photography Search Competition is open to all amateur photographers. Only underwater photographs will be accepted.

2. ALL ENTRIES MUST BE SUBMITTED TO A PARTICIPATING PADI TRAINING FACILITY FOR LOCAL JUDGING. Local winning entries will then be sent to PADI Headquarters for international judging. Applicants may enter as many photographs as they wish; Photographs may have been taken any time with no geographic restrictions.

3. An entrance form and a \$4.00 fee per entry to the participating Training Facility must accompany all photographs submitted. The completed form acknowledges reprint rights for PADI International when proper photographic credit is given.

The utmost care and handling will be given all entries, but no responsibility will be assumed by PADI International or any PADI Training Facility. Photographers retain ownership, and all entries will be returned after the judging has been completed.

4. Winners shall be chosen in two categories: Color, and Black and White.

**Color** - Color entries should be mounted slides (transparencies) in plastic protective sleeves.

**Black & White** - All prints should be a minimum of 5" x 7" and a maximum of 8" x 10", glossy finish and mounted on an 8" x 10" mount board.

Participant's name, address, telephone number, and the title of the photo must be printed clearly on the back of each entry.

5. Local judging will be done by PADI Training Facility staff members, international judging will be done by the PADI Underwater Photography Search Competition Committee. Acting as advisors for the judging will be Jack McKenney, internationally known underwater photographer/film maker, and Bill MacDonald, Special Projects Director of the Cousteau Society.

6. Winners will be chosen by a point system based on technique, lighting, and composition. Decisions by judges shall be final.

7. The Search Competition shall begin July 1, 1979 and end October 31, 1979.

### Grand Prize Winner

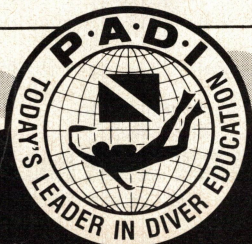
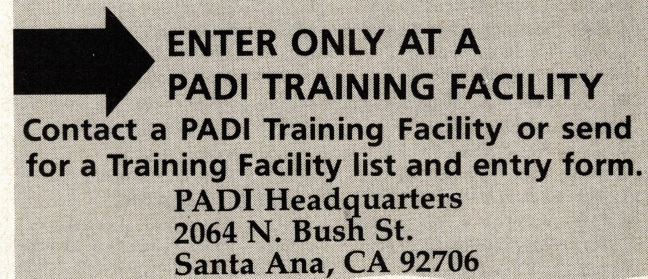
An eight day— seven night expense paid dive trip to beautiful San Salvador Island, at the Riding Rock Inn Resort (a PADI Five Star Training Facility). The winning photograph will also be used as the cover of *The Undersea Journal*, and will be featured at Underwater Photo Expo '80.

### 20 Regional Winners

Publication in *The Undersea Journal* and exhibition at Underwater Photo Expo '80.

### Over 2,000 Local Winners

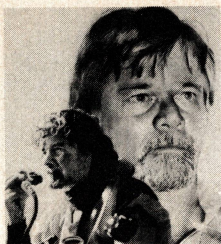
Dive gear, dive trips, custom prints and many other prizes awarded to local winners at over 400 sanctioned PADI Training Facilities around the world.



# PADI

## TODAY'S LEADER IN DIVER EDUCATION





**Robert J. Shourot**  
President, Undersea Systems, Inc.  
President, Coastal Diving Operations, Inc.  
Director, Coastal Diving Academy  
President, The Dive Shop, Inc.

# The Dive Shop's 2-way money-saving plan.

Get the lowest mail order prices plus in-store discount.

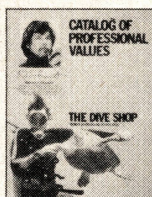
## SAVINGS #1

Wherever you live you can get the very special prices of Long Island's most professional diving equipment distributor. For fast service and quality assurance order direct, using the mail order coupon.

- A. Aquastar Glasstar Watch \$64.95
- B. Oil Filled Depth Gauge \$21.95
- C. Decompression Meter \$60.95
- D. U.S.D. Pressure Gauge \$34.95
- E. U.S.D.  $\frac{3}{16}$ " Nylon 1 Side Wet Suit, 1 Zipper \$62.95
- F.  $\frac{1}{4}$ " Cold Water Hood \$13.95
- G. Contour Back Pack \$25.95
- H. Travel Spear With Case \$25.95
- I. U.S.D.  $\frac{1}{4}$ " Nylon 2 Sides Farmer John Taskmaster Suit \$159.95
- J. Allen Light \$39.95
- K. U.S.D. Seahawk Knife \$23.95
- L. U.S.D. Pacifica Mask \$11.95
- M. U.S.D. Snorkel \$4.95
- N.  $\frac{1}{8}$ " 5 Finger Glove \$12.95
- O. 96-page Diver's Log Book \$4.95
- P.  $\frac{3}{16}$ " Hardsole Boots \$14.95
- Q. U.S.D. Rocket Fins \$17.95

### ACT NOW!

These low prices can only be guaranteed for one month after magazine issue date.



Send for our free catalog and diver decal.

## SAVINGS #2

Scuba tanks, regulators, buoyancy compensators and other underwater life support apparatus cannot be advertised for mail orders. But the big discounts can be yours by using this "price-off" certificate at The Dive Shop.

## #1. Direct Mail Order Form

THE DIVE SHOP 110 West Main St., Bay Shore, N.Y. 11706

THE DIVE SHOP pays all shipping costs within the continental U.S.A., but there is a \$2.00 service charge for orders under \$25.00.

Outside the continental U.S.A. (Alaska, Hawaii, Puerto Rico, etc.) all freight charges are C.O.D.

- A ☐ Aquastar Glasstar Watch \$64.95
- B ☐ Oil Filled Depth Gauge \$21.95
- C ☐ Decompression Meter \$60.95
- D ☐ U.S.D. Pressure Gauge \$34.95
- E ☐ U.S.D.  $\frac{3}{16}$ " Nylon 1 Side Wet Suit, 1 Zipper \$62.95
- Ht. \_\_\_\_\_ Wt. \_\_\_\_\_ Chest \_\_\_\_\_
- Waist \_\_\_\_\_ Hips \_\_\_\_\_
- F ☐  $\frac{1}{4}$ " Cold Water Hood \$13.95
- G ☐ Contour Back Pack \$25.95
- H ☐ Travel Spear With Case \$25.95
- I ☐ U.S.D.  $\frac{1}{4}$ " Nylon 2 Sides Farmer John Taskmaster Suit \$159.95
- Ht. \_\_\_\_\_ Wt. \_\_\_\_\_ Chest \_\_\_\_\_
- Waist \_\_\_\_\_ Hips \_\_\_\_\_

- J ☐ Allen Light \$39.95
- K ☐ U.S.D. Seahawk Knife \$23.95
- L ☐ U.S.D. Pacifica Mask \$11.95
- M ☐ U.S.D. Snorkel \$4.95
- N ☐  $\frac{1}{8}$ " 5 Finger Glove \$12.95
- Sm. \_\_\_\_\_ Med. \_\_\_\_\_ Lg. \_\_\_\_\_
- O ☐ 96-page Diver's Log Book \$4.95
- P ☐  $\frac{3}{16}$ " Hardsole Boots \$14.95
- Shoe size \_\_\_\_\_
- Q ☐ U.S.D. Rocket Fins \$17.95
- ☐ FREE CATALOG

The Dive Shop reserves the right to substitute models or brands of equivalent or greater value, which you may return unused within 10 days if not delighted.

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Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

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N.Y. RESIDENTS  
ADD SALES TAX

## #2. In-Store Discount Certificate

SD-7



- R. U.S.D. OCTOPUS \$49.95
- S. U.S.D. BCII VEST \$99.95
- T. DEEP-SEA HELMET \$1500
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80 cu. ft. aluminum tank  
Contour back pack  
Consheff XIV regulator  
\$239.95 w/K-valve  
\$262.95 w/J-valve

U. SCUBA SPECIAL

- V. 80 cu. ft. aluminum tank  
\$124.95 w/K-valve  
\$134.95 w/J-valve
- W. Contour back pack \$25.95
- X. Consheff XIV regulator \$91.95

"Where professional divers shop."

**THE DIVE SHOP, INC.**

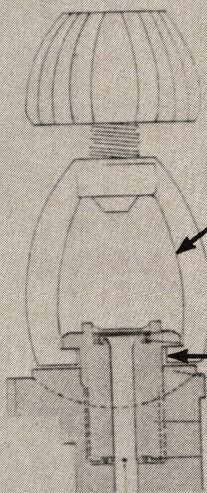
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# CLASSIFIED

## The Ventura TR-30: Practical High Performance

This year's best kept news is next month's arrival at your Tabata dealer of the Ventura TR-30 regulator. Manufactured in the U.S. with a lifetime warranty, it has features and benefits found in no other nationally advertised brand. Features like two high pressure ports — offset to prolong hose life and an exclusive self-cleaning double covered second stage diaphragm. Make an appointment now at your nearest dealer to see and dive the Ventura TR-30 in August.



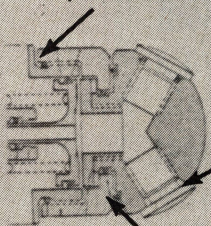
4000 psi forged brass swivel yoke.

Swivel allows first stage to be turned to fit all sizes of valves and types of tanks. Yoke retainer may be removed and replaced with optional DIN fitting. Internationally adaptable for worldwide travel.



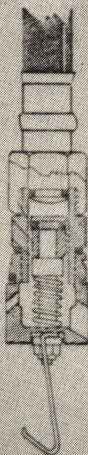
Two high pressure ports keep gauges in standard position no matter how the first stage is turned. Ports are angled 30 degrees forward to relieve hose stress and direct submersible pressure gauge toward the diver.

Balanced flow-through stainless steel piston for maximum air flow performance.



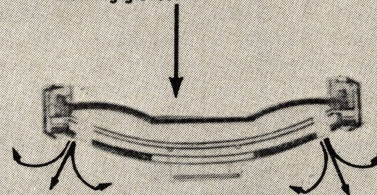
Four low pressure accessory ports.

O-ring sealed low pressure swivel. Prolongs hose life and prevents fine sand from building up under cap.



Anti-free flow port. Automatically stops loss of air during dive from octopus accessory. A standard feature on all Tabata second stages.

Self cleaning double covered diaphragm. Uses the diver's natural breathing rhythm to pump out sand and silt. Rugged stainless steel outer cover strengthens lightweight nylon case. Inner rubber cover protects sensitive silicone diaphragm and allows easy purging while wearing gloves.



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in  
August

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“Swim five feet toward shore, drop down and you’ll be right on it,” I heard over the loud hailer. “Okay, Betty, descend now.” Sliding effortlessly down a huge piece of bull kelp that hung limp in the slack current, I could hardly believe it when John and I landed directly on the backbone of the wreck of the clipper ship *America* just offshore from San Juan Island. Veteran dive boat skipper Cal Longstaff had done it again.

Probably the oldest — yet newest — dive boat on the San Juan Island dive scene in the Pacific Northwest is the 103 foot, 96 ton *Zumbrota* — superbly outfitted for divers from her Mako K-15 compressor right through to her skipper Cal. Though the boat is new to the area, Cal is no stranger: He has been taking divers to the San Juan Islands for the past seven years, and before that, he took dive charters out of San Diego.

With equal expertise, Cal will guide you to sunken wrecks or exquisite game or photography spots. If you want to collect abalone, spearfish or photograph soft coral, this colorful, rich inland sea is protected from open ocean surge, is easy to dive and the *Zumbrota* is a marvelous charter.

As John and I drift slowly onto Reid Rock near Friday Harbor, everything is alive. Maroon feathery bottom kelp hides abalones under its bright fronds as swimming scallops, which we see so often in the San Juans, clap up around us. Kelp greenlings play. Pink, lavender and green brooding anemones cover the white and yellow rocks. Putting my hand on the side of the rock to slow my descent, I touch a red Irish lord. We continue down onto frilly white plumose anemones spilling over into an underwater valley like gigantic white puffs of whipped cream. The site is peaceful. Bright. Alive.

At Goose Island 15 or 20 seals slip into the water as we do. Working our way down over the irregular rocky bottom glinting with purple and green bottom kelp, we see kelp greenlings, masses of giant barnacles, giant red and small green urchins. A galaxy of anemones in various colors: pale green, lemon yellow and red with pink and white polka-dotted tops. There are also three inch high yellow stag-horn bryozoans in knobby clusters, purple tube worms

reefs and drop-offs where you can explore, collect food and take photographs. Weekend charters allow time for after-dive sightseeing on land, as well, wherever you tie up for the night: Rosario Resort Hotel on Orcas Island where you can see the ornate bowsprit saved from the *America*; Victoria and Sidney, British Columbia; and Lopez Island are some usual stops.

Divers who know San Juan waters will also enjoy just being on board this vintage

a fishing charter and then for diving off the California coast.

Today the *Zumbrota* operates out of La Conner, Washington, one hour north of Seattle. With a bunk for every passenger and a complete galley, it makes diving the Pacific Northwest a real pleasure cruise. And you can dive as much as the repetitive tables will allow.

The boat accommodates up to 20 divers plus 8 or 10 non-divers with a 34 bunk capacity and crew of four. Cal

**Dive Boat  
Zumbrota  
Visits  
Richest  
Dive Sites  
In The  
Northwest**

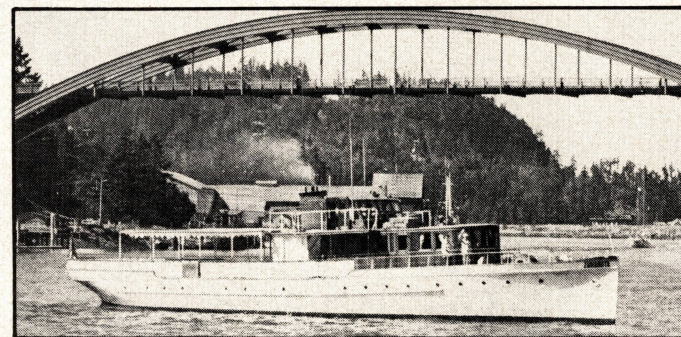
# CRUISING THE SAN JUAN ISLANDS

By Betty Pratt-Johnson Photography by Neil G. McDaniel

and a bright orange hermit crab peeping from a shell.

Another site, another message: schools of black rockfish swim past as we drop onto the reef just west of Blakely Island for our last dive of the weekend. A lingcod looks out of a hole. Sea peaches, a couple of rock scallops and some soft red sponges cling to the silt-covered, irregularly layered rocks. Ron Terry and Bill Tewalt pass with a lingcod they’ve speared. Continuing down, John and I see quillback rockfish hiding in small silty caves and ledges. Greenlings. Giant barnacles. A cabazon. No octopus this trip, but maybe next time.

The *Zumbrota* cruises at 12 knots to some of the richest dive sites in the world: wrecks,



courtesy Zumbrota Charters

yacht. Built in 1918 for one of the Ringling brothers, it was named after a big circus elephant. In 1922 the vessel came to the West Coast and in 1929 became a pleasure craft for the likes of Mae West and Douglas Fairbanks, Senior. After serving the U.S. Navy in the war effort, it was used as

Longstaff and his crew are devoted to delivering what’s promised: “All you can eat. All you can dive.” It’s a good way to see the San Juans.

For information or reservations, contact: Captain Cal Longstaff, *Zumbrota*, P.O. Box 742, La Conner, WA 98257. Or call (206) 466-4101.





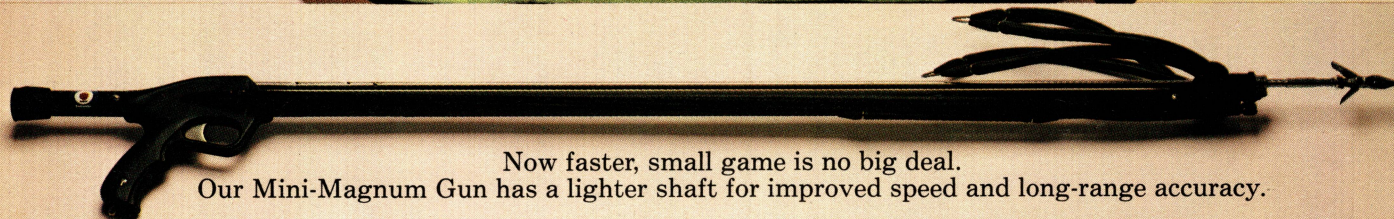


# We've made changes from head to toe.

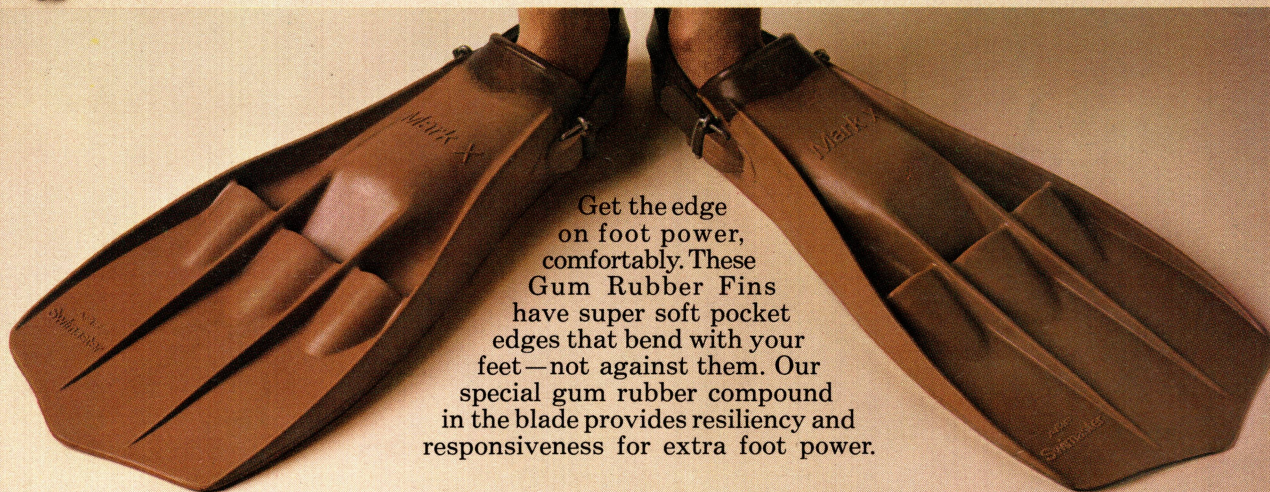


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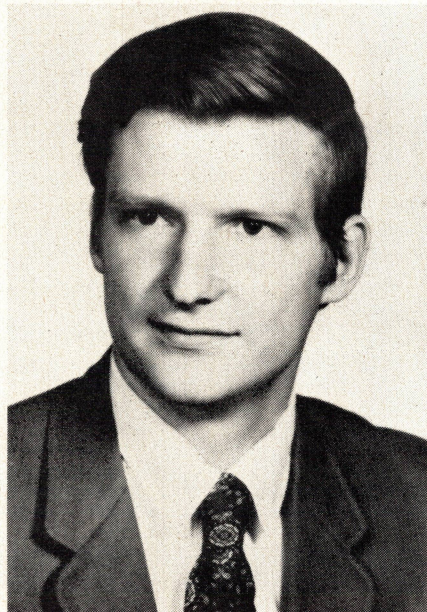
Santa Ana, California 92704





## SOUND WAVE SYSTEMS STUDIES DROPOUTS

A participant sport that consistently loses half the people it attracts is basically in a hold position, says Dennis J. Johnson, president of Sound Wave Systems, Inc., Costa Mesa, Calif.



Johnson and his partners have been studying the persistent dropout problem, and they believe they've hit on its cause.

"Emotional involvement in the sport requires a sharing of the dive experience, and sharing means communication," Johnson commented. "Voice communication underwater achieves that end and makes divers feel freer and more natural."

A leading manufacturer of underwater communication systems, Sound Wave Systems has been observing the effects of underwater communication on beginning and advanced students.

"We believe that communication is essential from day one — from the student's early pool work on snorkel to open ocean dives," Johnson said. "He'll learn better and feel more involved and more comfortable underwater if he is in voice contact with his instructor and dive buddies."

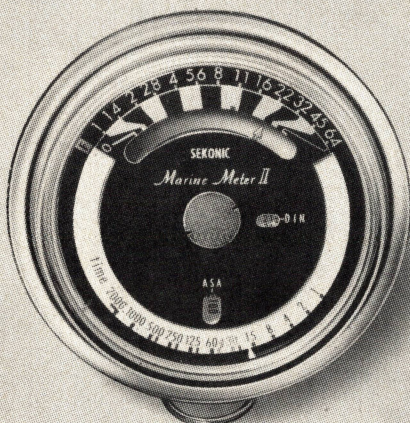
Sound Wave Systems' studies have shown that basic diving skills can be taught more quickly and effectively with underwater communication, leaving more room for advanced instruction, which leads to better trained divers.

## PAGE TO SCUBAMASTER

Tom Page has been appointed marketing manager for the new Scubamaster line of dive gear. He will have full responsibility for all aspects of marketing, from advertising to pricing and product development. Page comes to Scubamaster from Seatec where he worked as director of marketing.

## Sekonic Underwater Exposure Meter

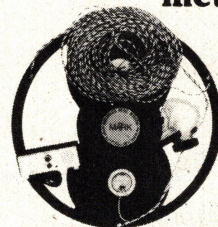
Sekonic's 164B Marine II—a unique CdS meter built for underwater photography. Durable case is water- and pressure-resistant to a depth of 200 feet. Fluorescent dial; large knobs for easy adjustment with gloved hands. Can also be used in rain, snow or normal conditions. Complete with leather case and chain. Under \$150. At photo dealers or dive shops everywhere.



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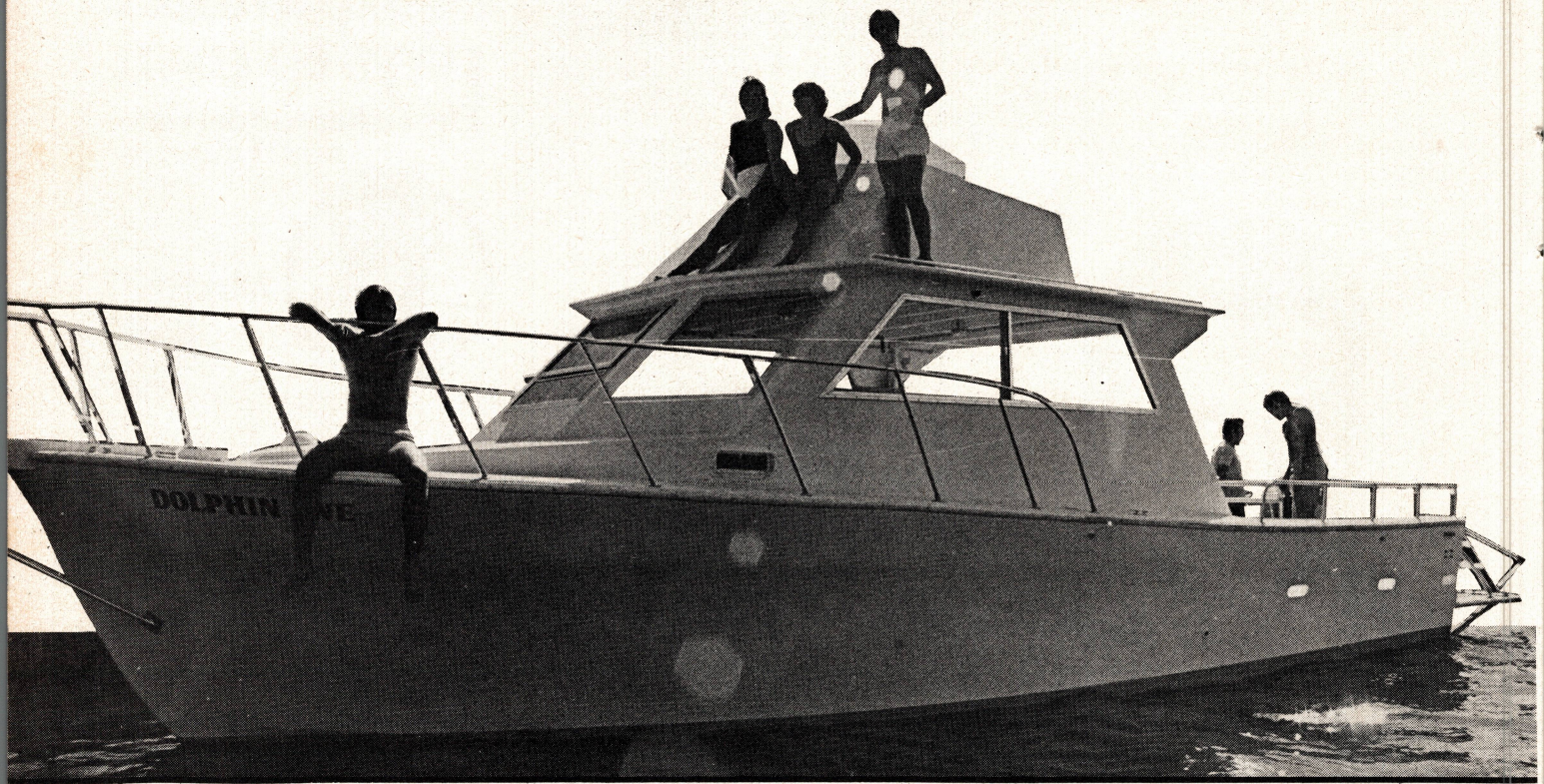
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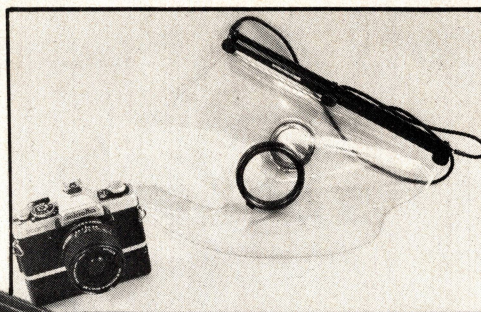
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# THE EWA MARINE Flexible Housing



photographs by Geri Murphy

**T**he first time I saw one, I had my doubts. How could I possibly trust my \$500 motor drive, 35mm SLR camera to this little plastic bag? A dozen test dives later I was singing a different tune. I had used this incredibly simple, but safe, housing at depths ranging from 10 to 60 feet with nary a leak and actually got some sharp pictures to boot!

Although the EWA-Marine housing is not a new idea, it does offer several new features. The bag itself is made of a soft but durable double-laminated, heat-welded PVC. It is fully transparent and yet extremely resistant to punctures or abrasions. There is a total of 15 different sizes and configurations which will fit just about every popular camera on the market today. Eight of the models are designed for still cameras — from a basic 35mm SLR to a large format 2 1/4 x 2 1/4. There are another seven models specifically designed for movie cameras — from Super 8's to professional 16mm units.

Perhaps the most important feature of the EWA-Marine is that every bag is equipped with two permanently sealed optical glass ports. The one on the front of the bag accommodates the lens and the one on the rear accommodates the viewfinder. Although the bag is plastic, you are shooting through an optical glass port like those on more expensive professional housings.

Another unique feature of the EWA-Marine still camera bag is a built-in glove which allows the diver to conveniently operate almost all of the camera controls. The glove is permanently bonded to the wall of the bag and is flexible enough for good dexterity.

The camera is inserted into the bag via a large opening at the top. Two long stainless steel rails form a tight-fitting flange which seals the opening. The seal is closed tightly by means of two thumb screws which clamp the edge of the bag absolutely watertight. The simplicity of design and ease of operation make the EWA-Marine easy for anyone to use.

For SKIN DIVER's open water test, the newly introduced Minolta XG-7 all-electric automatic 35mm camera was used. This sophisticated 35mm SLR provides automatic shutter speed selection, a through-the-lens light meter and LED

## A Novel Approach To U/W Photography

By Paul J. Tzimoulis

read-outs. It is also equipped with a power autowinder for rapid film advance. The user need only select the optimum aperture setting, aim the camera and push the trigger button. With such fine electronics it is hard to go wrong. Our choice of lens was a 24mm f2.8 Rokkor X.

We started our dives in shallow water, working our way deeper until we had reached 60 feet. One thing the user immediately discovers is that the buoyancy of the bag must be pre-set on the surface before the dive. For example, much of the air in the bag should be squeezed out if you are planning a shallow dive in 5 to 15 feet of water. However, if you are planning a dive to 30 feet or more, it is wise to trap as much air in the bag as possible.

Because the bag is more or less a universal size designed to fit many different camera models, the two lens ports don't necessarily line up for each and every camera. It makes it a little difficult at times to keep the camera lens pushed up against the front lens port while attempting to jockey the rear view port in line with the viewfinder. The task becomes easier as you go deeper and the air within the bag becomes compressed. Still another discovery is that the user should place his or her hand into the operating glove at the surface. At depth it becomes difficult to either insert or remove your hand from the glove because of the compression around this intricate cavity. During all 12 dives we never once experienced a leak or any other difficulty with the bag.

One hint which might prove helpful on those hot muggy days is to insert a couple of packets of silica gel in the housing

to prevent condensation. Warm, humid surface air will start to condense because of the cooler temperatures frequently found at depth. The silica gel will prevent fogging of the camera lens.

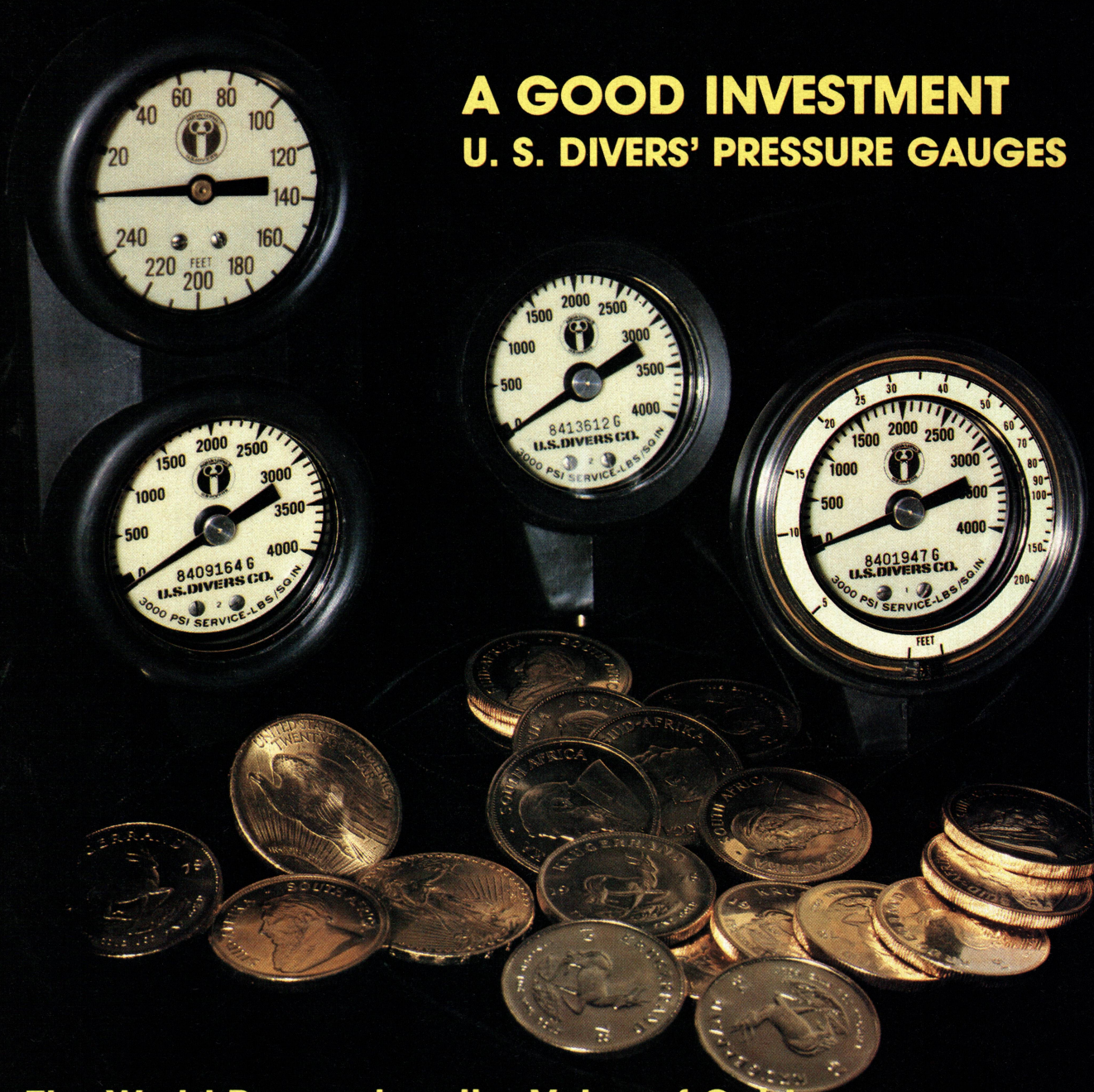
In conclusion, I would highly recommend the EWA-Marine for beginning underwater photographers who do not want to make a major investment in camera housings. The EWA-Marine sells for \$49 up to \$85 depending upon size and shape. The model we were using for the Minolta XG-7 sells for \$59. Incidentally, experienced underwater photographers might find the EWA-Marine a handy backup housing in case a regular one malfunctions. The bag folds flat and packs well in just about any suitcase.

For best results, the EWA-Marine should be used in shallow water where there is a maximum amount of light, color and contrast. Depths from 5 to 15 feet are ideal, thus making this housing a perfect accessory for snorkelers. The EWA-Marine is basically a housing for available light photography, as there are no external connections for an underwater flash. Some models will accommodate a mini-strobe inside the plastic bag but the results may prove less than satisfactory. A flash positioned so close to the camera lens invites backscatter problems.

The EWA-Marine works with automatic SLR cameras such as the Minolta XG-7. Automated controls reduce the need for internal adjustments and make it much easier to use this flexible housing. There is no question about it, the EWA-Marine is a novel and effective approach to inexpensive underwater photography. >>>



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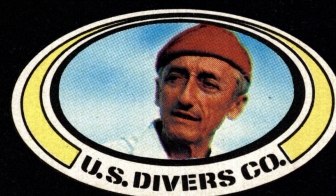
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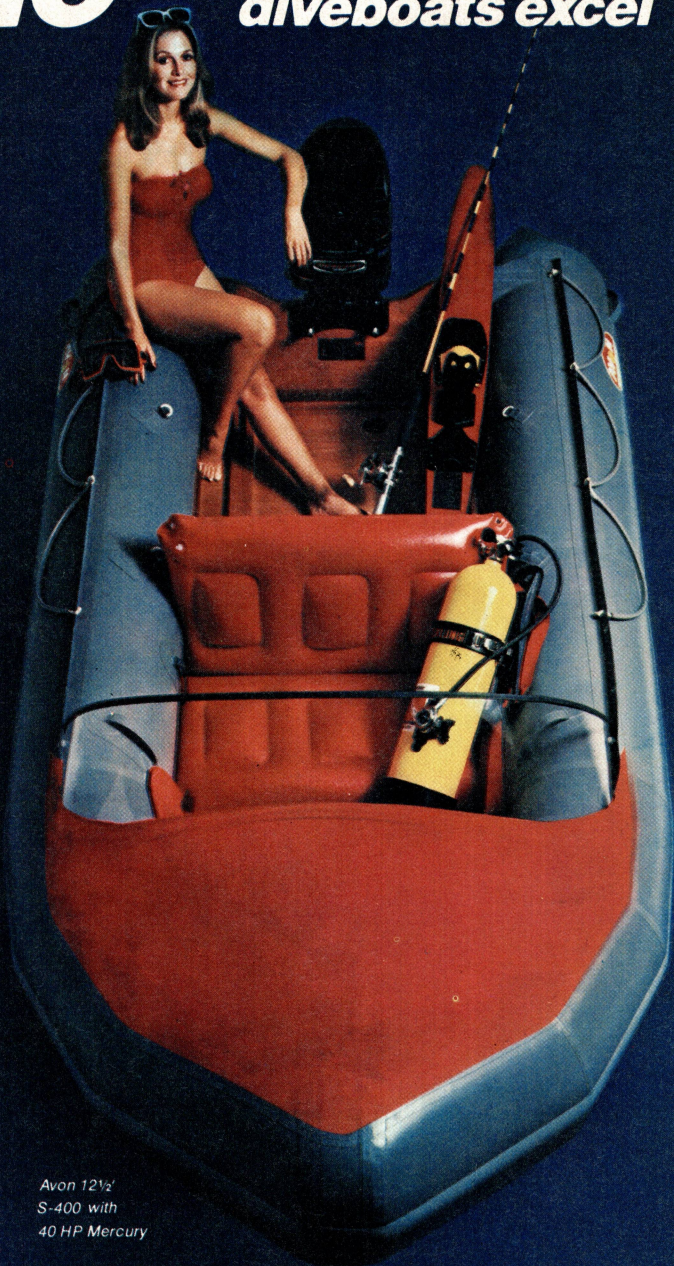


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## COUSTEAU SOCIETY PROGRAM

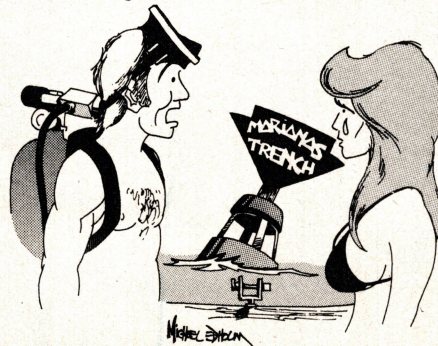
Captain Jacques-Yves Cousteau and his son Philippe, directors of the non-profit Cousteau Society, have announced plans for a unique instruction program designed to involve beginning divers in protection of the sea. Formulated in association with the major dive instruction organizations, The Cousteau Society Marine Awareness Program represents the first joint project undertaken by the U.S. based environmental education society and the diving community.

The program will consist of a flexible teaching kit for local dive instructors, complete with *Calypso* photos from around the world and information about the current health of the world ocean. Additional materials in the kit will enable instructors to create their own one-hour lesson, focusing on safety as well as concern for the undersea habitat.

To promote diver involvement, the new Cousteau Society Marine Awareness Program will explain undersea life-support systems, focusing on the impact of human interference and suggesting alternatives. The lesson emphasizes the slogan "Be Aware" — as a prescription for halting undersea abuses, but also as a means of increasing personal safety while diving, through increased knowledge of undersea circumstances.

Writing in the October, 1978 issue of *SKIN DIVER*, Jacques Cousteau described divers as the "natural wardens of the sea." They are the first witnesses to its decline, he observed. "The experiences I so passionately introduced to my children may not be available to my grandchildren. The seemingly endless wildlife scenes portrayed in *Silent World* are disappearing everywhere. We divers are witnessing the demise of the precious wilderness we discovered . . . All of us who have actually been in the sea must unite to save it for our children."

The Cousteau Society announcement indicated that the new Marine Awareness kits, which will include patches, decals, certificates, and other materials, would probably be available directly from instructor organizations. ✕



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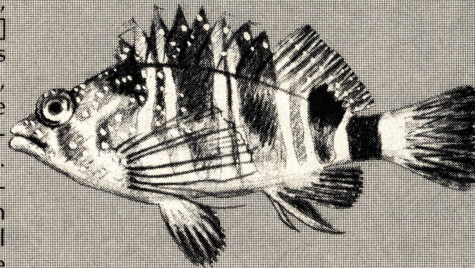




## The Redspotted Hawkfish

(*Amblycirrhitus pinos*)

The only species of hawkfish found in the Caribbean is *Amblycirrhitus pinos*. Like its Indo-Pacific relatives, it is a brightly colored fish that seems to have two decorative patterns going on at once: The front half of the fish is bespeckled with bright, almost iridescent red spots, while the back part has five broad dark vertical bars. In between the dark bands are white sections divided vertically by narrow brown bars. There is a large black spot at the top of the next-to-last bar, and the very last band, at the base of the tail, is black. The red spots on the head extend back onto the dorsal fins. Each tip of the dorsal spines is topped with a tuft of cirri — fleshy, weed-like protuberances. □ Scientifically, hawkfishes are classed as Cirrhitidae, which are believed to be very close to the scorpionfish (Scorpaenidae) family. The two share the characteristic thickened dorsal fin rays, although the dorsal spines of the hawkfishes are longer, more separated and free. Hawkfishes also have the weed-like cirri so typical of the scorpaenids, but they don't have the head spines of the scorpionfishes. Ichthyologists James Bohlke and Charles Chaplin suggest that hawkfishes may form the link between the bass-like fishes and the scorpaenids. The hawkfish is separated taxonomically from all other reef fishes by its pectoral fin rays. In our pictured specimen they are extended down and outward. □ Altogether there are five *Amblycirrhitus* species of hawkfishes known (four of them in the Indo-Pacific). The Caribbean *Amblycirrhitus pinos* lives in both shallow and deep waters, from 8 to 100



feet. According to Bohlke and Chaplin, it is found from the Bahamas and Florida, the Greater and Lesser Antilles, and the banks off Central America. It is a small fish, reaching a total length of about three and one-half inches. The juvenile has a more compressed, elongated body than the adult. The tail is forked and the eye is nearer the center of the head as compared to its later location near the upper profile. □ The hawkfish gets its common name because it resembles a hawk in its behavior. It perches on top of a coral head or on the bottom, sometimes propping itself up on its strong pectoral

fin rays, and lies in wait for some unwary prey. In a sudden vulture-like dash, it will capture a small crustacean or passing planktonic organism, then dart back to its perch on the reef. The red-spotted hawkfish has a voracious appetite, and its scientific name suggests this. One of the Greek meanings for *pinos* is "hungry." The major part of the hawk-

fish diet is planktonic copepods. Ichthyologist John Randall's study of the feeding habits of *A. pinos* indicates that copepods comprise nearly half its food intake, followed by shrimp and shrimp larvae, crabs and crab larvae, polychaetes, isopods and amphipods. Other than short forays for food, the hawkfish rarely swims far from its perch on the reef. The fish can be so attached to its resting place that it may hang onto it even if removed from the water. Hawkfishes have wriggled out of a piece of coral on dry land. For this reason, Hawaiians call hawkfishes *pilikoa*, which means "coral-clinging." »

*Photo By John Lidington - Text By Hillary Hauser*

The photo was shot in 20 feet of water in Pennekamp Park, Fla. Lidington used a Nikon F2 in an Oceanic/Farallon Hydro 35 housing, a 55mm Micro-Nikkor lens, an Oceanic/Farallon 2001 strobe with 2000 slave.





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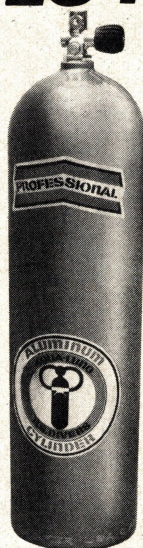


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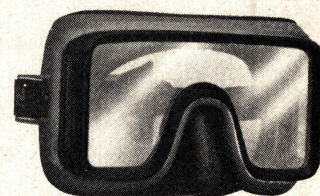
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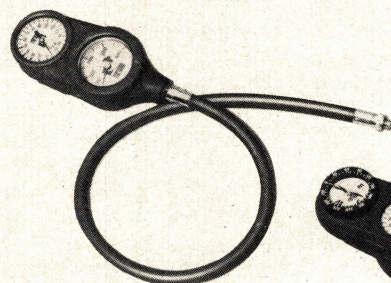
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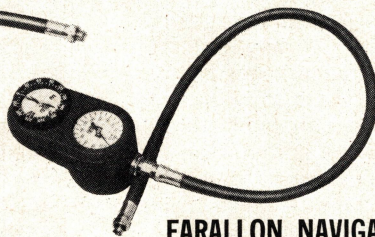
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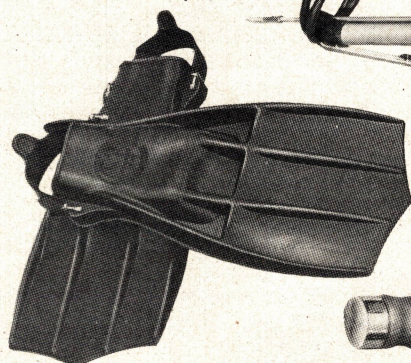
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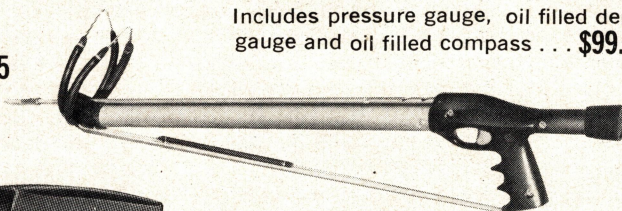
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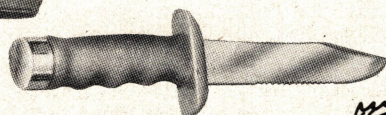
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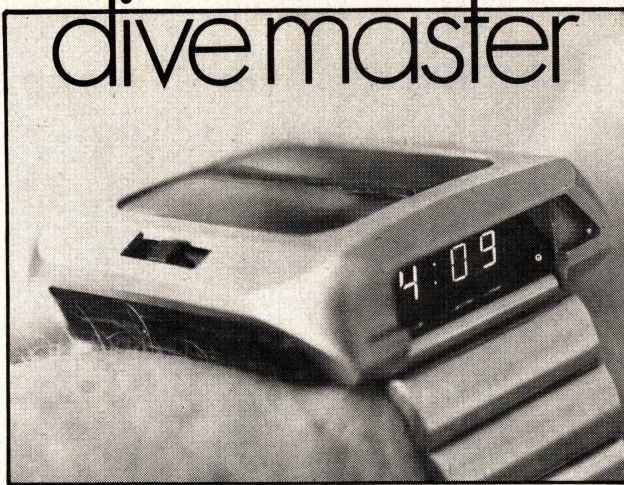
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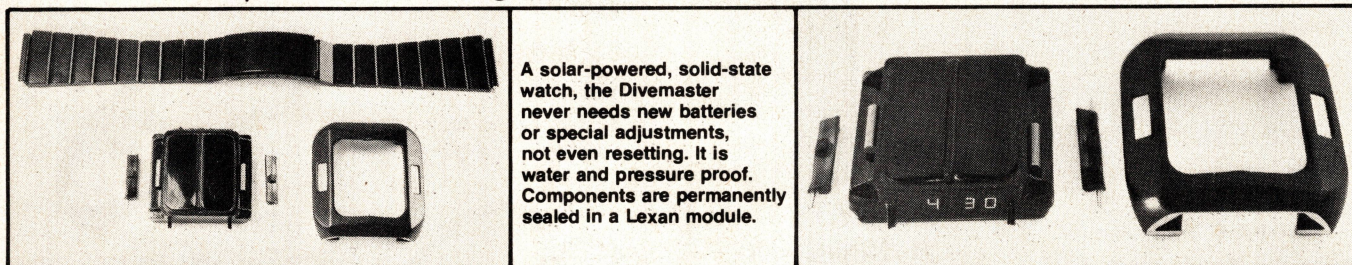
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# the dive master watch



It's a solar-powered digital that's tested to 750 feet By Geri Murphy



**T**he Divemaster is a solar-powered, solid-state digital dive watch. It never needs battery replacement or special adjustments. It requires no maintenance or servicing and the calendar never needs resetting. It has been pressure tested to 750 feet and will operate in temperatures from  $-40^{\circ}\text{F}$  to  $176^{\circ}\text{F}$ . It is shock resistant and guaranteed to be absolutely waterproof and totally accurate for two years. For a small fee you can have the warranty extended to ten years. Incredible you say? Yes, it is incredible, but there is a good, logical explanation as to why this watch will perform as well as the manufacturer claims.

The key to the Divemaster's success is that its components are permanently encapsulated in a module made of Lexan. The hermetically sealed watch module is also filled with a non-hardening gel that not only protects it from shock but eliminates all air space inside. Because there is no air inside the module, it is less likely to leak at depth. It is this unique design that assures the owner of a trouble-free, waterproof, pressure-proof watch.

The Divemaster is powered 100 percent by light energy. Located at the top of the watch is a solar panel which gathers and stores energy from direct sunlight, indoor daylight or even an ordinary light bulb. The only thing that won't recharge it is fluorescent lighting. The watch operates on this stored energy and will work even after being stored in the dark for a few days. If the Divemaster does run down from overuse of the display or be-

cause it was stored in the dark over a long period of time, it is easily recharged in a few hours by exposure to sunlight or a light bulb. The time display will automatically shut off when the power storage levels fall below 10 percent, but the internal operation continues to keep time. When the watch is recharged, the display read-out will show the correct time and calendar without any adjustment.

There are five different read-outs: hour, date, weekday/seconds, leap year/speed, and seconds. The read-outs are bright red, light-emitting diodes (LED's) and are activated by moving a sliding control bar magnet. Located on either side of the solar panel, these switches are spring loaded and return the magnet to off automatically when released.

The watch has three built-in light intensities which automatically adjust to the ambient light conditions. The module itself is slightly recessed within the stainless steel case and is shaded for display, allowing easier reading in bright sunlight.

The Divemaster guarantees accuracy to within eight seconds per year even though electronic watches are susceptible to changes in temperature. The Divemaster allows the owner to change the speed of the watch simply by moving the two sliding switches in the proper sequence to compensate for local climate.

The Divemaster is electronically programmed to display the correct month and day with no resetting for the next 123 years. The watch compensates automatically for 28, 30 and 31 day months and

even adds in February 29 during leap years. The exact date will display without resetting until the year 2100.

The Divemaster is easy to read underwater and is especially appreciated inside a wreck or at night because of the bright LED read-out. The slightly recessed switch is not difficult to slide back while wearing dive gloves. And, only the right switch needs to be moved to read the time display. Moving the same switch forward will give the date display. The left switch will display the weekday/seconds and leap year/speed. By moving both switches forward you will get a display of the passing seconds.

The only disadvantage we could observe during open water tests is that the wearer must have one free hand to activate the LED read-out. Also, the Divemaster does not have a bezel or elapsed time memory for calculating bottom time accumulated or remaining. The user must make a mental note of the time at the start of the dive and subtract that number from the current read-out.

The Divemaster is without a doubt a watch that will last more than a lifetime and whether you dive with it or just wear it for everyday use, you can be sure it will always be accurate. Sold with a two year warranty, the watch module can be warranted for ten years for an additional \$10. The Divemaster retails for \$129.95 in brushed stainless steel or \$159.95 with a black ceramic finish. For more information write: Divetime Industries, 337 West John St., Hicksville, NY 11801.



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**B. DEMAND LEVER**—Tipped with an anti-friction teflon® button, this lever slides easily across the diaphragm disk for smooth regulator operation.



**C. HOUSING**—Unobstructed wind tunnel designed for reductions of turbulence and inhalation effort.

**D. ASPIRATION TUBE**—Directs air flow to and around the mouthpiece tube. Generates just the right partial vacuum to reduce the amount of suction effort.

**E. SEAT**—Made of new longer lasting silicone seat for more durability. Resists deterioration of seating surface.

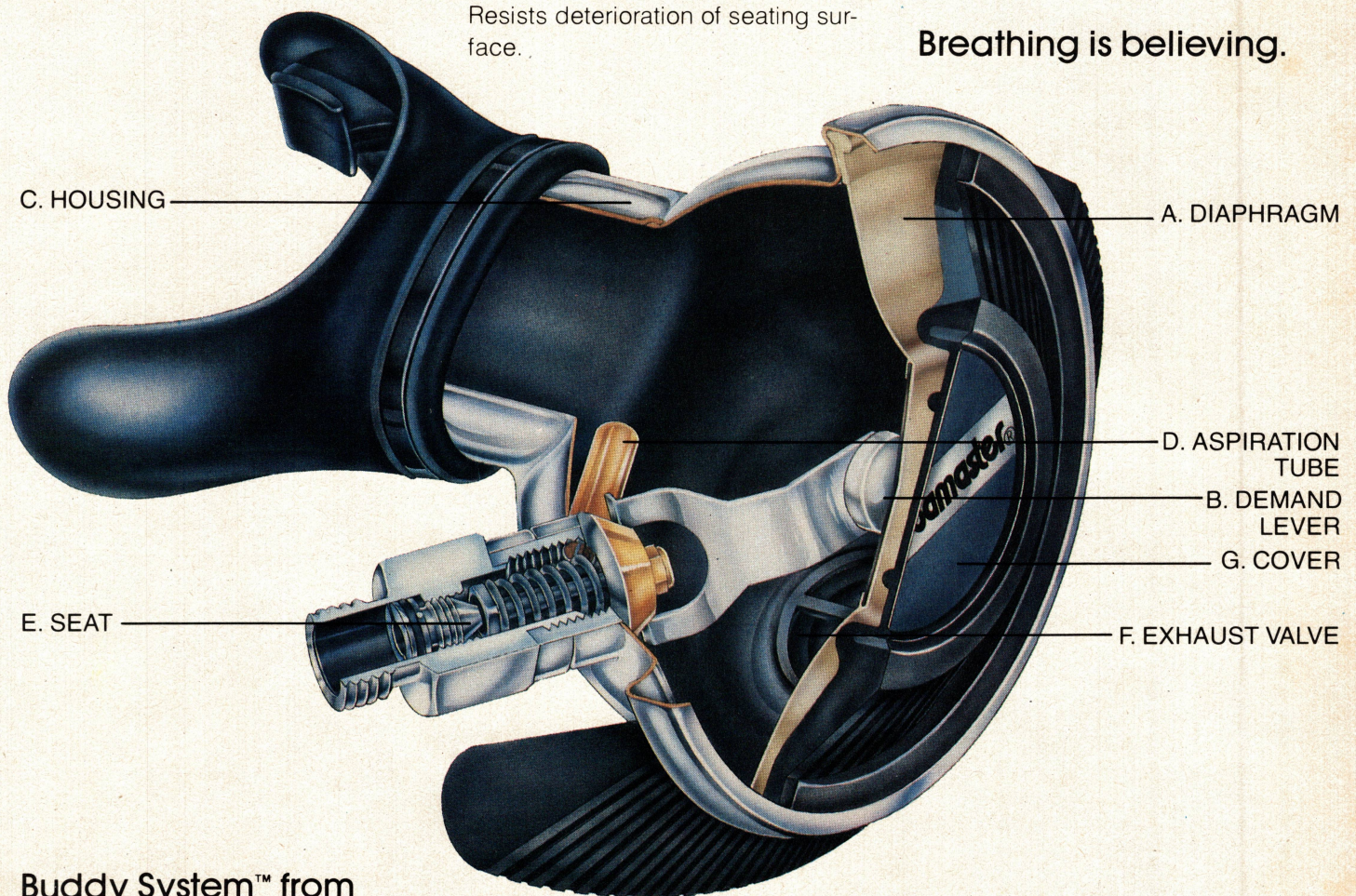
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There comes a time in every diver's life when he looks out at a favorite dive spot and thinks to himself, "That's just too far to kick." Or, his buddy will say, "We've got to find some other places to go, there are 50 divers here today." But, virgin spots are virgin because they are hard to get to and thus have not received the pressure or attention the

easier spots experience. It doesn't take an adventuresome diver long to reach the obvious solution: get yourself a boat.

Once that thought pops into your head it's like a fever. When the fever strikes, you will start to view everything you see from a row boat to a 100 foot motor cruiser as your potential *Calypso*. This soon passes

and you will look at your available storage space, the cost of berthing a boat, the cost of fuel, the family savings account and try to figure out the compromises between your dream and some form of reality. You will also think about other things you would like to do or could do with the boat in addition to diving (every little bit of justification helps). You should also

# INFLATABLE BOAT ROUNDUP

BY BILL TUBBS

PHOTOGRAPHY BY PAUL TZIMOULIS AND GERI MURPHY



into the diving picture — they are too heavy and much too large for most of us to handle. It is the cousins of these big white water craft — the dinghies and sport boats — that are of interest to divers and most other pleasure boaters.

## DINGHIES

Dinghies or tenders are the simplest and, some feel, the only true inflatables. These range in size from 6 feet to around 14 feet in length. Most have a soft flooring. Dinghies are basically a displacement type of boat

not designed for speed. They take motors in the 3 to 5 hp range. There is no fixed transom at the back for a motor, but some type of motor mount is available as an option. Dinghies are very compact and require only about 10 minutes to set up. They will get you from A to B and back again and are the design to choose if you: anticipate having to carry a boat any distance beyond a few yards; have to line a boat down a cliff to reach a special beach; do not anticipate having to travel in a boat for more than a few miles. Also, if you

don't want to spend the family fortune, a dinghy is your boat. The cost will be about one-half that of a sport boat with compatible motor.

## SPORT BOATS

Sport boats or runabouts are more sophisticated than dinghies. These have a hard flooring of wood, wood covered with urethane, or aluminum. They are designed to plane and thus have either hard (marine plywood) or inflatable keels. These keels give a "V" bottom effect and help the boat track better at speed. Sport boats



consider how much time and effort you want to devote to boat maintenance. All of these mental gymnastics help to clarify your needs and reduce the broad category of boats to a manageable size for consideration.

If you realize that diving is your primary concern and you really don't want to spend a whole lot of time working on a boat, then you should seriously consider an inflatable. It can be stored in a closet and launched from almost any spot accessible to divers. It can be deflated and carried in the back of a car or set

up at home and either trailered or tied to a car top. Inflatables take rough use and yet demand only minimal maintenance to keep them in good working condition. To top it off, they are extremely safe and make a highly stable diving platform.

An inflatable consists simply of a tube or series of connected tubes bent into a "U" or oblong shape. Some type of flooring is attached to the tubes to form a single unit — a boat. The tubes are compartmentalized to form two or more separate air chambers. When inflated, these give

the boat its shape and flotation. It is also these chambers which make the inflatable extremely safe. Each is sealed off so that if one is punctured the other(s) will keep the boat and its passengers afloat.

Of course, there are inflatables and there are *inflatables*. There are those flimsy boats kids use in swimming pools. They are fun but not really suitable for a diver's needs. Then there are large, heavy duty rafts used for white water trips. They take fantastic amounts of punishment and last for years, but they don't really fit



range in size from 10 to over 20 feet in length, with most around 12 to 17 feet. They will take motors from 10 hp up to 100 hp. Motors are mounted on fixed wooden transoms — standard on all sport boat models. Sport boats can be set up with remote (wheel) steering and electric starters.

If you anticipate pulling water skiers, traveling much more than about five miles, need speed and lots of power, then this is the design to consider. Sport boats take longer to set up because there are more things to put together. Flooring and keels add

about another 10 minutes setup time for a sport boat as compared to a similar sized dinghy. If you have remote steering and/or electrical starting, allow yourself an additional 15 to 20 minutes.

The bigger the boat and the more gear it has, the longer it takes to set up and the less portable it becomes. But, these disadvantages are offset by the added range and speed the sport boat provides. To help move these larger boats around on the shore, launching wheels are a useful option. These attach at the

stern and allow the boat to be pulled rather than carried to the launch site. With some of the bigger inflatables with large motors, it may be easier to leave them set up and trailer them. No special trailer is needed, just one that meets your state's legal requirements and will easily hold the boat and motor.

#### **DETERMINING SIZE**

Once you have determined the type of inflatable you want, the next step is to determine the size you will need. Unfortunately, the capacity of





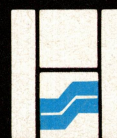
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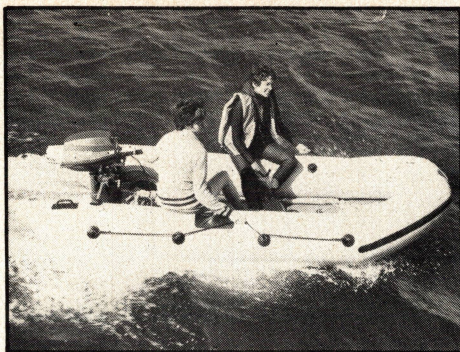
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an inflatable as indicated by the manufacturer is not really indicative of a diver's needs. The ideal method would be to take all the divers you anticipate carrying, and their gear, down to the local dealer and see what they will fit into. But that isn't too practical. A rough idea can be determined by adding up the number of divers you plan to carry, multiply by two (for gear and tanks) and add one for the boatman. Thus if you and your buddy are all that you plan to carry, your minimum capacity should be five. That means five people inside the boat. Most pictures show passengers sitting on the tubes while underway but this is an unsafe practice and should be avoided. When considering the size you will need, gear plays a large part. You will be carrying equipment for each diver plus motor, gas can, anchor and a couple hundred feet of line, oars, repair kit, pump and amenities such

as food, water, coffee or whatever else you like to have with you. These all take up space and should be considered.

### AIR CHAMBERS

When selecting an inflatable boat, the number of air chambers is important. As mentioned, these are the flotation units of the boat. Even the most carefully built, heavy-duty inflatable can be punctured by spears, nails, barnacles and sharp rocks if hit just right. With multi-chambers the boat will keep some of its shape, even if one of the chambers is punctured, and you can get it back home. If only one chamber is intact, you will still have sufficient flotation, but it may be very difficult to move the boat in the water. All manufacturers provide repair kits and a few people have made repairs while offshore and pumped the boat back up with the portable foot pump. However, it is

comforting to know you can make it home without having to go to such lengths.

### INFLATABLE MATERIALS

Every inflatable suitable for diving and other family water sports is fabric supported. This means that the basic material is a woven fabric coated with something else. Older inflatables used cotton as the basic fabric but this has now been replaced with nylon, polyester and Hypalon. Some experimental work is being done with Kevlar, a new product, as the basic fabric but at present none of the Kevlar products is generally available. Each of the fabrics used has some characteristic which caused the manufacturer to select it. Each can be woven with any of the others to meet a particular manufacturing specification. And each can be woven to meet various test strengths. This is usually given as a weight measure, indicated as ounces per yard, but is sometimes given in denier. It is easiest to remember that the higher the number, the heavier and stronger the material. The heaviest material will usually be in the flooring; this will be listed separately from the tube weight.

The basic fabric is coated with one or more protective products such as neoprene, Hypalon, vinyl or polyurethane. These coatings (both inside and out) help keep air in the boats and serve to protect the basic fabric from abrasion, chemical attack and degradation by sunlight. It all sounds simple. But each manufacturer has extensive laboratory tests supporting each fabric and coating; and it is very difficult to determine which, if any, are really superior. A lot has to do with the production techniques used with each fabric and coating. Each combination must be worked differently. Nylon coated with neoprene has been used for the longest period and the varying techniques and materials are attempts to improve on this combination.

### SEAM CONSTRUCTION

Whatever the basic fabric and coating, it will come in sheets; these must then be formed into tubes and flooring. Thus, seam construction is a critical point. There are three types used in the manufacture of inflatables: edge seams, butt seams, and lap seams. The edge seam pulls the edges of the material together and then the edges are bonded, just like the seams of a wetsuit. The butt seam pulls the edges of the material together at a 90 degree angle to the shape and then the material is bonded. The lap seam has a portion of the material overlapping the other piece by an inch or so and then it is bonded. This is considered to be the strongest seam although military specifications often call for the butt seam.

Once the seam has been made, it must be held together or bonded by some means. Two methods are used with in-



flatables, gluing or heat sealing. The gluing method uses a two part industrial adhesive. In heat sealing, heat is applied to the seam until the material partially fuses together. The bonding method is chosen because of the materials used rather than because one method is better than another. Some manufacturers use both, particularly with the butt seam.

To protect a seam from abrasion and increase its strength, tape may be used both internally and externally. The internal tape protects the seam from internal air pressure and reduces the potential for air loss from tiny holes not completely sealed by the bonding process. These internal tapes also help reduce the loss of air — which occurs with nearly all inflatables over time. Exterior taping helps retain the shape of the boat when inflated, and protects the seam from wear.

### TUBE DIAMETER

The diameter of an inflatable's tubes determines, to a great extent, the maximum load-carrying ability. In general, the larger the tube the greater the safe load. The size of the tube will also determine how wet or dry the ride will be: The larger the tube size, the more protection offered from spray. But extreme tube sizes can also be a handicap. As tube size increases, there may well be a reduction in usable space. An increase in tube size also means more surface area for the wind to work against. An inflatable sits on the surface of the water almost like a cork and, like a cork, it can be easily blown about. Sport boats compensate somewhat for this by providing keels, which tend to bite into the water. Dinghies, however, have no keels and thus will usually have smaller tube diameters than comparably sized sport boats.

### FILL PRESSURE

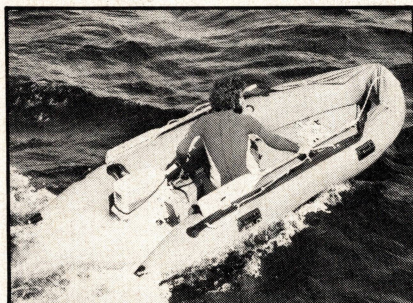
Each manufacturer specifies the fill pressure needed for its inflatables. The range will usually be between 2 and 5 psi. This pressure is what is needed to provide enough rigidity to maintain the shape of the boat without stretching the material. If the boat is not inflated to the correct pressure, it will tend to bend or snake in the water. This bending, both up and down and sideways, reduces the efficiency of the boat and makes it handle and ride poorly. Until enough experience has been gained to judge the fill by feel, a pressure gauge is needed.

### CHOOSING AN INFLATABLE

Now that you have some idea of what an inflatable is and how it is made, you can move on to the next step: gathering information about particular boats. Write to as many manufacturers as possible for all available information. Try to meet and talk with as many inflatable owners as you can. They can tell you about any problems they have had and about features



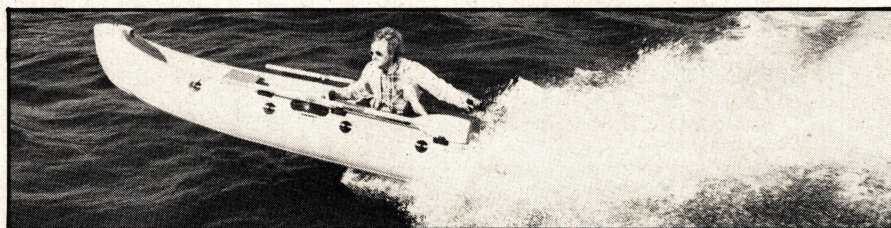
Callegari, Super Airone



Campways, Argonaut 331



Bonair, Brute 500



Metzeler, Juca



Achilles, DT-4

of their boat which they like or dislike.

The knowledge gained from reading and talking with people will prepare you for your next step: serious shopping. You should visit as many dealers and see as many different boats as possible. If the dealers offer you a ride, take them up on it. If possible, take control of the boat while underway. Try to get the feel of various models.

While looking around at the various boats, ask the dealer two questions: 1) Will he let you jump up and down on the tubes while it is inflated, and 2) Will he fill to twice the recommended fill pressure? He may look at you a little strangely, but there are reasons for these requests. First, if you are going to be using an inflatable around a rocky shoreline, it will have to be able to take a lot more punishment than you will give it jumping on it in a showroom. Pumping the inflatable to

twice the fill pressure does two things: It serves to check the integrity of the seams; and it simulates what might happen if you fill your boat to the proper psi and leave it out in the hot sun. Most manufacturers conduct burst testing at three times fill pressure so twice is not too much for a well-made boat. The only inflatables which will not fill to twice the pressure are Zodiac and Explorer. These have special relief valves to make sure that they do not become over inflated. This is not done to hide defects in workmanship but to prevent owners and users from damaging the boat through carelessness.

It is in your own best interest to shop around. Visiting dealers and seeing the boats will fully acquaint you with the boats and accessories available. A good quality inflatable, especially a sport boat, will cost just as much or even slightly more than a "hard" boat of comparable size.



# INFLATABLE BOAT MANUFACTURERS

COMPANY	# MODELS AVAILABLE	INFLATED SIZE		WEIGHT (LBS.)		MATERIAL	PRICE RANGE
		SMALLEST	LARGEST	SMALLEST	LARGEST		
<b>Achilles</b> 25 Branca Road East Rutherford, NJ 07073	18	8'4"x4'1"	16'9"x6'11"	35	264	Nylon/ Hypalon	\$275-\$3150
<b>Avon</b> Seagull Marine 1851 McGaw Ave. Irvine, CA 92714  Imtra Corp. 151 Mystic Ave. Medford, MA 02155  Inland Marine 79 Jackson St. Wilkes-Barre, PA 18701	11	9'x4'4"	16'6"x6'10"	65	283	Nylon/ Hypalon	\$770-\$3189
<b>Barakuda</b> Elco Marine 21912 Winnebago El Toro, CA 92630	3	9'10"x4'10"	13'2"x5'11"	75	178	Polyester/ Neoprene	\$889-\$1995
<b>Bonair</b> 15501 West 109th St. Lenexa, KS 66219	6	9'10"x5'4"	16'5"x6'5"	45	175	Nylon/PVC	\$650-\$2325
<b>Boston Whaler</b> 1149 Hingham St. Rockland, MA 02370	4	8'6"x4'9"	11'3"x5'1"	46	93	Polyester/ Rubberized Plastic	\$690-\$1190
<b>Callegari</b> British Motors, Dist. Ltd. 19100 Susanna Road Compton, CA 90221	14	8'x4'	15'11"x7'1"	29	273	Polyester/ Neoprene/ Hypalon	\$610-\$3533
<b>Campways</b> 12915 S. Spring St. Los Angeles, CA 90061	12	8'x4'	15'x6'4"	37	215	Nylon/ Hypalon	\$325-\$2100
<b>Explorer</b> Meyers Industries, Inc. Box E, Tecumseh, MI 49286	5	9'x4'7"	14'6"x6'2"	42	170	Polyester/ PVC	\$725-\$1995
<b>Hutchinson</b> Port City Marine Co. Box 3767 Wilmington, NC 28406	13	8'7"x6'3"	13'10"x9'4"	46	196	Nylon/ Hypalon	\$695-\$2195
<b>Inflatable Systems</b> P.O. Box 1109 Orange, CA 92666	3	8'6"x4'	14'x6'8"	44	115	Nylon/ Neoprene/ Hypalon	Not Available
<b>Maravia Corp.</b> 857 Thornton St. P.O. Box 395 San Leandro, CA 94577	6	8'x4'	16'x6'8"	37	230	Polyester/ PVC	\$625-\$2450
<b>Metzeler</b> Inflatable Boat Center 510 Santa Monica Blvd. Santa Monica, CA 90401	10	8'9"x4'2"	15'x6'6"	41	193	Polyester/ Neoprene-polymer	\$650-\$2300
<b>Novurania</b> Proko International 12511 Beatrice St. Los Angeles, CA 90066	12	8'4"x4'10"	16'x7'	44	338	Polyester/ Neoprene/ Hypalon	\$660-\$2800
<b>Semperit</b> Steyr Daimler Puch of America Corp. P.O. Box 7777 Greenwich, CT 06830	7	8'4"x4'8"	13'1"x5'9"	50	224	Polyester/ Hypalon	\$525-\$2390
<b>Zodiac</b> Port-A-Marine Inflatable Boats 2925 College Avenue, B-2 Costa Mesa, CA 92626  Zodiac of North America, Inc. 11 Lee St. Annapolis, MD 21401	13	9'2"x4'7"	17'6"x7'2"	48	297	Nylon/ Neoprene/ Hypalon	\$793-\$5483

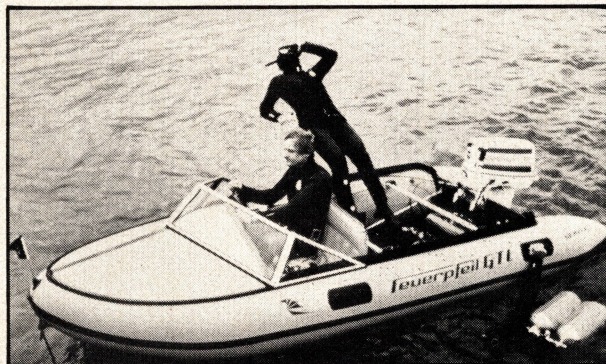




Zodiac, Mark IV Grand Raid



Novurania, Poseidon 5



Semperit, Feuerpeil GTL



Avon, S550



Maravia, Breeze



In March SDM invited inflatable boat manufacturers to a photographic session in San Pedro, CA. All morning long individual boats were filmed. At noon, activities ceased for lunch. Afterward, the entire inflatable navy took to the harbor waters for the photograph on the opening pages.

## OWNING AN INFLATABLE

Once you buy your inflatable, the fun and learning begins. If you have never owned a boat before, or even if you have owned several boats, you should take a course in basic boat handling. These are offered by the United States Power Squadron and the Coast Guard Auxiliary throughout the country. They are free or at most only a few dollars. What you learn will not make you an experienced sea captain overnight, but will familiarize you with the rules and regulations and give you considerably more confidence.

Taking care of an inflatable is not a major task. The best maintenance is a good bath with dishwashing detergent after each use. Sand, dirt and debris can get into nooks and crannies and cause wear. If you plan to store your boat inflated, you should release some of the air and allow the material to rest. This will prevent stretching, especially with nylon fabric, which in time could change the lines of the boat and its handling characteristics. The surface coating usually will not require special attention, but you may find that spraying the floor area of sport boats occasionally with Armor-All will make it easier to insert the floorboards.

If you select an inflatable with a hard flooring, consider installing indoor/outdoor carpeting. The standard flooring is very slippery when you are wearing wet booties and the carpet will provide some traction. The carpet will also help reduce your maintenance by protecting the varnished floor.

Inflating your boat is a simple operation. Every manufacturer provides a foot pump with each boat. In addition there are options such as a Y attachment which allows the use of two foot pumps at the same time. All you have to do is stand up on them and walk. Electrical pumps which operate from a cigarette lighter receptacle are available; another attachment will allow you to fill your boat from one or more scuba tanks. Some enterprising folks even use the exhaust from their vacuum cleaners for inflation.

Using your inflatable as a diving platform is also easy. To enter the water, just sit on the tube and roll back. An inflatable is so stable that two or more divers can enter the water at the same time from the same side of the boat without tipping it at all. Getting back into the boat is also easy if you follow a few simple steps. First, put hanging lines on the boat. These are

lengths of line with a clip or fastener on one end. You then swim up, take off your weightbelt and attach it to one of the hanging lines; do the same with your tank. Next, push yourself down into the water slightly and then pull up, give a kick and roll on into the boat.

You will need some safety equipment and the primary one is a boatman who is not going to dive. You may skipper your boat to and from the dive spot but it is the boatman who takes care of any problems that might arise while you are diving. It is also the boatman's job to come after you if the current should carry you and your buddy too far away for a safe swim.

Always carry oars or a couple of good canoe paddles. An inflatable is not the easiest boat to row, especially if you are heading into the wind. But if your motor fails, those oars or paddles will be your only means of locomotion. You can also use the oars to keep your boat away from docks and piers with those nice long nails.

If you choose your inflatable carefully, it will be an investment, not a purchase. Look over the want ad section of your local newspaper. When you find an inflatable listed, you will see that it is selling used for about what it cost originally.



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skin diver magazine's

1st COMPLETE GUIDE

# TO THE FLORIDA KEYS

over 109 miles of tropical islands and coral reefs!

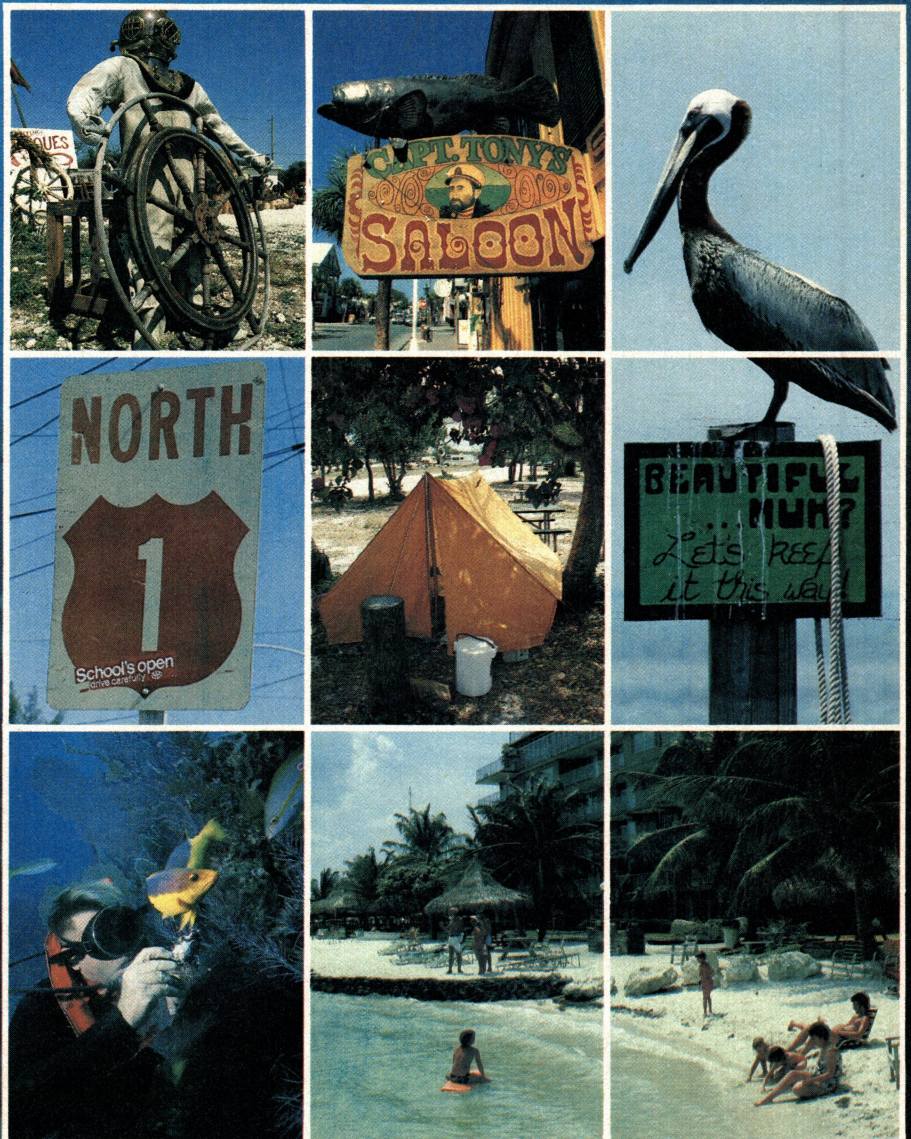




The Florida Keys is a large string of tropical islands which lies off the very southern tip of the state. Although they are considered part of the Continental U.S., this archipelago of American isles is a different world. There are more than 200 coral islands and islets in this chain, with some 50 major ones connected by bridges and causeways. The Keys run in an east to west direction at the same latitude as Nassau, Bahamas.

Jutting out into the Gulf of Mexico and the Straits of Florida, the Keys share all of the same attributes found among their Caribbean neighbors. There are white sand beaches, swaying palm trees, fine resort hotels and Tahitian style restaurants. The sun is strong, the air is clean, the stars shine brightly at night and the pace is easy. Best of all, the Florida Keys are surrounded by warm, clear tropical seas filled with colorful fish and living corals — not to mention the Spanish treasure wrecks which have gained so much notoriety in recent years. Although it may be a little more subtle, the Keys evoke that special island atmosphere which vacationing divers constantly seek.

One of the unique features of the Florida Keys is that they can be reached by automobile. They are the only Caribbean islands of which this is true. Barely 50 miles south of Miami via modern freeways, this lovely string of islands is neatly threaded together by a major highway known as U.S. Highway #1. Beginning at the top of the Keys (Key Largo) you can conveniently drive the 109 mile span of tropical paradise in approximately three hours. You won't need a passport, can travel in your own car and carry as much dive equipment as you desire.



There are two sides to a vacation trip to the Florida Keys: topside and underwater. Shown on these two pages are examples of both. There are a wide variety of sights to be seen as one travels over U.S. Highway #1. Underwater there are always pretty fish to photograph and living coral reefs to explore in warm water.

Text and photography by Paul J. Tzimoulis



Perhaps the most impressive thing about the Florida Keys is the incredible dive facilities which exist there. There are more dive shops per mile in the Keys than anywhere in the United States, thus making it the largest concentration of dive facilities anywhere in the world.

As of this writing, SKIN DIVER Magazine counted a total of 38 dive operators in the Florida Keys. Because of the rapid growth and development in this resort area, there are new stores opening all the time, while others have moved, closed, or changed management. The evolution of the Florida Keys as a dive resort destination is moving at an astounding pace and the Keys today are nothing like they were five years ago. In an effort to help bring you up to date, SKIN DIVER personally visited each and every dive operator for the following update.

### CAPTAIN SLATE'S ATLANTIS DIVE CENTER

Mile Marker 106.5



**L**ocated off the main highway on the Garden Cove canal, the Atlantis Dive Center has the dive boat berthed next to the store. This is a new dive operation, in business since last Oc-

tober. Spencer Slate was formerly the director of the Jacksonville YMCA program and has been bringing dive groups to the Keys for five years. He primarily caters to dive groups and classes led by scuba instructors who are conducting open water training classes.

### HARRY KEITZ'S AMERICAN DIVING HEADQUARTERS

Mile Marker 105.5



**S**ituated right on the highway, American Diving Headquarters is the first dive shop you see when entering the Keys. It is a full service shop with equipment sales, repairs, rentals, in-

struction and dive trips. It caters to many dive groups and shops from the north but also serves many individuals and families vacationing in the Keys.

Harry Keitz, owner of American Diving Headquarters, has lived most of his life in Key Largo. Working in his father's dive shop since he was 14 years old, he was raised in a diver's environment. Previously a part owner in another shop since 1961, Harry has been in business in this dive shop since 1971. He now operates the dive shop, large marina, five dive boats, and another dive facility at a private resort club.

### SUNDIVERS STATION

Mile Marker 104



**O**nly 250 feet off the highway on Blackwater Sound, Sundivers Station is adjacent to Deep Six Marina. It's only eight steps from the door of the dive shop to the boats.

Operated and owned by John Halas and Garry Rinn, this dive shop caters primarily to individual divers and families. It also conducts special dive charters to the 1733 Spanish galleon wrecks lying south of Pennnekamp.

John Halas has been diving since 1963 and has a degree in marine biology. He has conducted many scientific studies at Pennnekamp Park and has been an underwater guide for four years. Garry Rinn has been diving for 13 years and is a certified NAUI and PADI instructor. Both John and Garry have their ocean operator's license.

### CAPTAIN STEVE KLEM U/W GUIDE SERVICE

Mile Marker 104



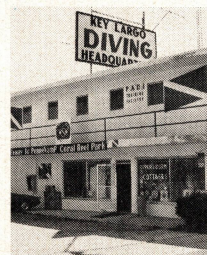
**T**his operation is a small one man dive charter service which caters primarily to experienced dive groups and families. Captain Steve Klem charts out his dive boat on a flat fee basis and

can handle up to six passengers. He has a small booking office located on the highway but it is open by appointment only.

Steve Klem has been diving since 1946 and has been operating an underwater guide service in Key Largo since 1958. Klem has developed a worldwide reputation for his specialized fish feeding technique and has discovered methods and techniques for hand feeding just about every fish in Pennnekamp Park including barracuda, triggerfish and even sharks. Capt. Klem has an incredible menagerie of underwater pets and has written a book on the subject that is entitled, *The Art of Fish Feeding*.

### KEY LARGO DIVING HEADQUARTERS

Mile Marker 103.5



**T**his is the largest and oldest dive store facility in the Florida Keys. Owned and operated by Terry Hold-erfield, Key Largo Diving Headquarters is a combination full service

## FLORIDA KEYS

dive store, on-the-premises marina, diver's dormitory, picnic ground and tiki bar, and dive charter service. KLDH has the newest dive charter boat in Key Largo that can carry 49 divers at a cruising speed of 19 knots. The boat, *Photo Diver III*, can sleep 15 divers and is licensed for Bahamas trips.

The most unique dive facility on the Key, KLDH features a diver's dorm that can accommodate 35 men (men's dorm) and 12 women (women's dorm). Dorms are available free if guests are diving with KLDH or for \$4.50 for those just passing through the Keys. In addition, there are six private bungalow units renting for \$20 per night. For dive groups flying into Miami, KLDH offers special free bus transportation from Miami International Airport to Key Largo.

### BILL CRAWFORD'S TROPIC ISLE DIVE SHOP

Mile Marker 103.4



**T**he Tropic Isle Dive Shop can be found one-quarter mile off highway U.S. #1 on the ocean side, next to Tahiti Village. This shop is a combination dive store, dive charter service,

complete scuba repair facility, and complete underwater camera repair center, all under one roof. In addition to a selective inventory of scuba gear and accessories, the repair department includes hydro test machinery, tank tumbling, an instrument test chamber and regulator repair.

Owned and managed by Bill and Charlie Crawford, the Tropic Isle Dive Shop usually runs three dive trips per day. Bill's specialty is underwater photography and he has had his photos published in many magazines, postcards, brochures and catalogs. There is a complete Nikonos Repair Center above the dive shop with three repair technicians on staff. The center repairs approximately 600 cameras annually and carries an inventory of \$5,000 in Nikonos parts.

### OCEAN DIVE CENTER

Mile Marker 103



**A**medium sized retail dive store operation, the Ocean Dive Center is a scuba discount store with gear at very attractive prices. There is a large T-shirt department and they han-





## *An Open Letter to the Public*

Whether you are an individual, a couple, a group, or a club, you owe it to yourself to read this letter and consider the facts. We have only one location. It is the oldest, the most complete, and the largest dive facility in KEY LARGO, regardless of what you may have read elsewhere. We are the only facility with our own cottages right behind the shop, the only facility with our own full service marina right behind the shop, the only facility with our own diver's dormitory which you can stay in FREE if you are diving with us. We have cookout facilities and a Tiki bar down by the docks, and a free airport to Key Largo shuttle bus for those who qualify. No one can offer you a less complicated, more hassle free diving vacation than "the Mellow Men of the Sea." We've been doing it for years and no one, as you can see in the picture above, has a newer, better, or faster dive boat than us. The PHOTO DIVER III is only a few weeks old. She took over a year to build, cost over \$100,000.00, and was custom designed for divers.

We offer agency commissions, group rates, dive cards, air cards, night dives, ecology trips, instruction, complete rentals, sales and service on all major lines, daily charters to beautiful PENNEKAMP PARK, and monthly charters to the BAHAMAS. We've worked hard to get where we are today, and we take pride in giving you your money's worth. If you are coming to the Keys to dive or snorkel, you owe it to yourself to at least fill out the coupon below and mail it in for a free info packed flyer. Thank you in advance for your consideration.

Sincerely,  
The Mellow Men of the Sea

### **KEY LARGO DIVING HEADQUARTERS**

RT. 1, BOX 293 KEY LARGO, FLA. 33037

24 HOUR HOTLINE (305) 451-1151

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

GROUP \_\_\_\_\_ CLUB \_\_\_\_\_ COUPLE \_\_\_\_\_ INDIVIDUAL \_\_\_\_\_



# FLORIDA KEYS

dle Zodiac sales and services. The Ocean Dive Center is also a booking office for dive trips for Ocean Divers.

## OCEAN DIVERS Mile Marker 102.5

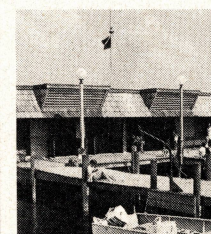


**S**ituated right on the main highway, Ocean Divers is a full service dive store with a large inventory of pro dive gear. There is a large repair department that handles repairs for U.S. Divers, Dacor, AMF, Sportsways, Healthways, etc.

Scuba instruction with PADI and NAUI certification is available as well as open water check-outs for dive groups coming from the north.

A full underwater photo department, operated by Steve Frink, is located on the premises which offers overnight E-6 processing. Camera and strobe rentals are available. Steve also teaches a three-day underwater photography seminar which includes six open water photo dives.

## CORAL REEF PARK COMPANY Mile Marker 102

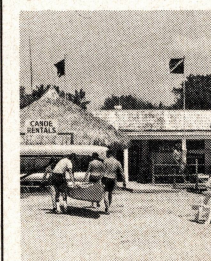


**S**tarted in 1965, the Coral Reef Park Company is the primary concession at Pennekamp's State Park grounds. The biggest snorkeling operation in the Keys, they make five trips

daily and can handle 270 snorkelers per day. They operate the largest snorkeling boat in the Keys — the 61 foot *Infante* — which takes 61 snorkelers per trip.

This operation is the only one that runs snorkeling trips exclusively. Specializing in snorkeling trips only, the dive depths range from 8 to 10 feet and are usually to Grecian Rocks. There is a large fleet of outboard motor boats for rent and a fast-food concession on the premises.

## QUIESCENCE DIVING SERVICES Mile Marker 101.5



**E**stablished two years ago, the Quiescence Diving Services is located at the Key Largo Kampground marina. This is a full service shop and a PADI training facility. There is a class-

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**ISLAMORADA**  
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U.S. 1, Windley Key  
P.O. Box 224  
Islamorada, Fla. 33036  
(305) 664-2711  
**MILE MARKER 84.5**

**KEY WEST**  
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Key West, Fla. 33040  
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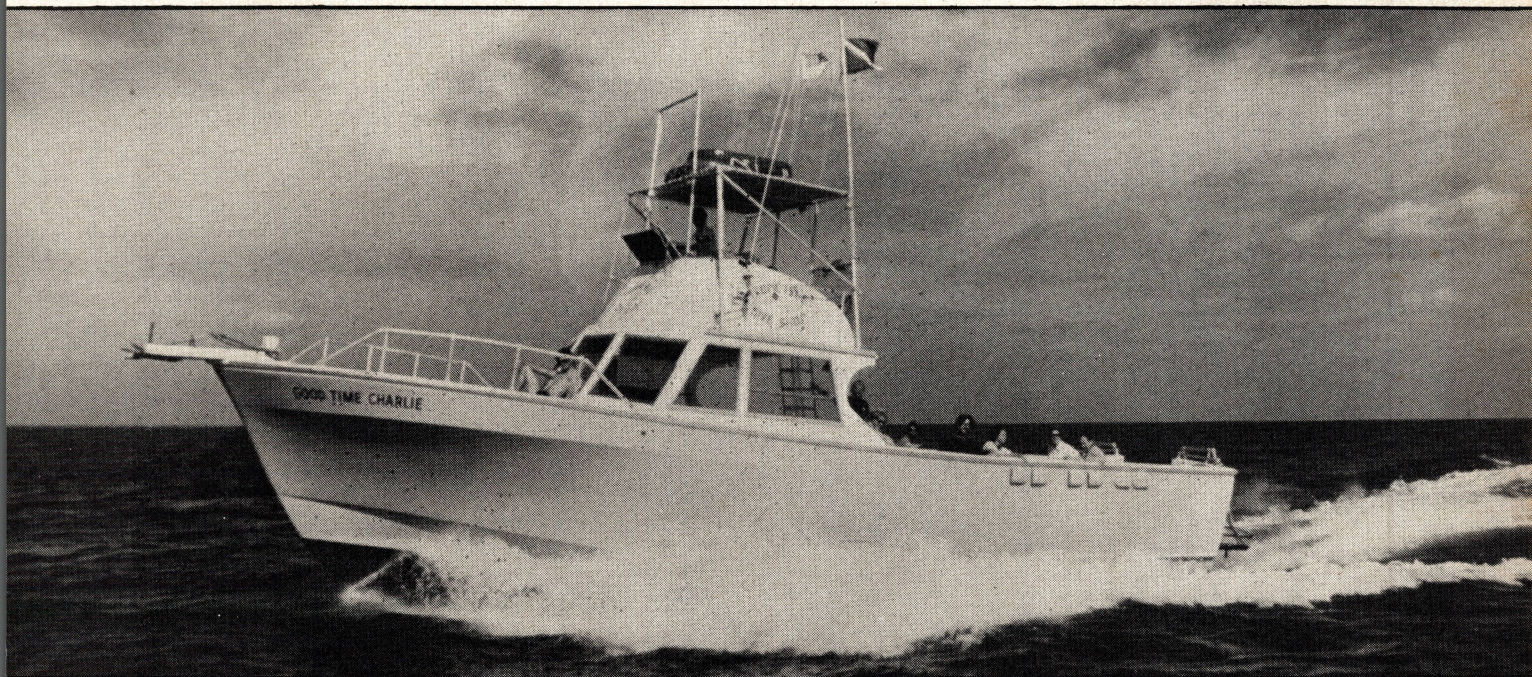
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Two 6 Passenger Boats  
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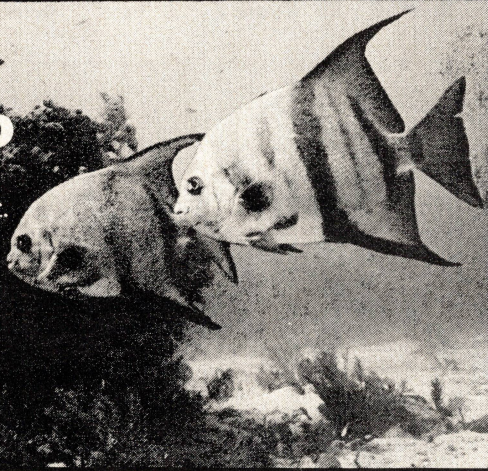
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Training  
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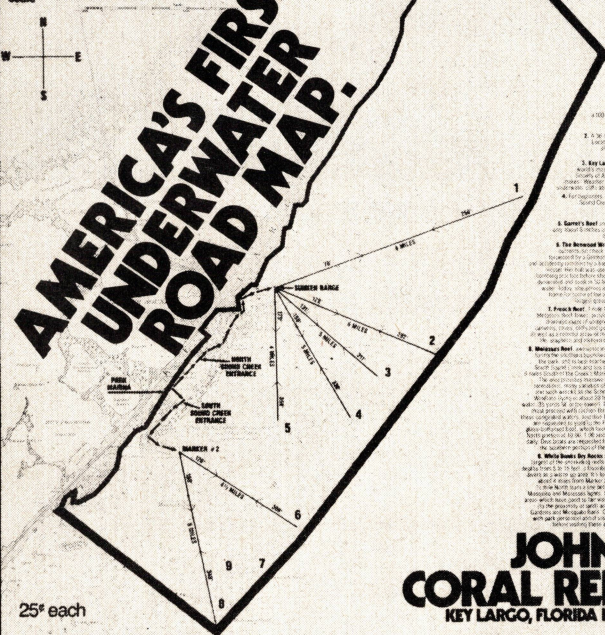
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## JOHN PENNEKAMP CORAL REEF STATE PARK KEY LARGO, FLORIDA KEYS DIVERS' MAP

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City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

## FLORIDA KEYS

room next to the shop that accommodates up to 20 students.

With emphasis on scuba instruction and charters, the operation teaches and certifies approximately 400 students yearly not including the open water check-outs for dive shops from the north. Paul Caputo, who supervises the scuba classes, is certified SSI, PADI and YMCA.

SEA DWELLERS  
Mile Marker 100

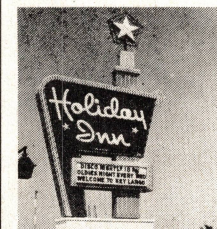


The Sea Dwellers is adjacent to the Key Largo Airport, ideal for private pilots. A professional dive charter service, this operation caters to experienced divers, offering deeper dive trips to small

groups. The Sea Dwellers also handles large dive groups for clubs and shops and checks-out as many as 5000 students yearly for instructors and dive shops from up north.

In operation for seven years, it is owned and operated by T. J. Holub and Larry Bateman. Holub has been diving since 1960 and is a certified PADI master instructor, and YMCA instructor. He has a captain's license and is a licensed commercial pilot for multi-engine airplanes. Bateman has been diving since 1969 and is a certified YMCA scuba instructor and also has a captain's license. The Sea Dwellers has enough inventory on hand to fully equip 50 divers.

CAPT. BOB KLEIN'S HOLIDAY INN  
SCUBA SHOP  
Mile Marker 100



Located right on the premises of the Holiday Inn, the store entrance is just off the hotel lobby. The dive shop has a moderate selection of dive equipment and an interesting display

of shipwreck artifacts and treasure.

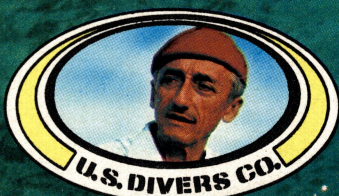
Bob Klein has been operating an underwater guide service in the Key Largo area for over 20 years and is an avid underwater treasure hunter and shipwreck salvor. Over the years he has salvaged an impressive collection of gold doubloons, silver pieces of eight, swords, pistols and cannons. He is well known for his solid silver weightbelt which was made from Spanish ingots. Klein operates the fastest dive boat in the Florida Keys. It can cruise at better than 40 miles an hour and permits long distance running to the more remote dive sites off Key Largo.



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- **JOHN PENNEKAMP PARK CONCESSION.** Free brochure, 25¢ for reef map. P.O. Box 13-M, Key Largo, FL 33037, Tel. (305) 451-1621.
- **SEA DWELLERS DIVE CENTER INC.** Group charters, rentals, sales, air, reef trips to Pennekamp Park. Mile Marker 100 at Airport, P.O. Box 1796S, Key Largo, FL 33037, Tel. (305) 451-3640 or (305) 245-0333.
- **REEF SHOP DIVE CENTER.** Sales, service, rentals, air, special group discounts. Mile Marker 84, P.O. Box 7, Islamorada, FL 33036, Tel. (305) 664-4385.
- **FRED & CINDY'S ATLANTIS MARINA.** Boat rentals to the reef, camping, motels, air, rentals, trips, complete dive service. P.O. Box 708, Long Key, FL 33001, Tel. (305) 664-4318.
- **HURRICANE LODGE-SUNSHINE KEY AQUA CENTER.** 5000 psi air, 64' boat, day and night Looe Key trips. Hurricane Resort Motel, 4650 Overseas Hwy., Marathon, FL 33403, Tel. (305) 743-2400.
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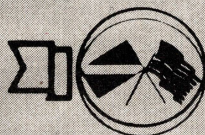
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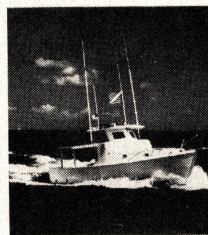
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## FLORIDA KEYS

### SEA FEVER DIVING CRUISES

Mile Marker 100

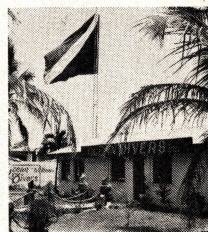


This is an independent dive charter service with the dive boat located at the Holiday Inn Marina. Run by Capt. Tom Guarino, this operation caters primarily to dive groups as well

as individual divers. Trips run two days/two nights with unlimited air and diving which are usually along the reef from Carysfort to Long Key. From May through September trips run four to seven days, with destinations such as Bimini and Cat Cay. Bahamas trips are restricted to nine divers.

### OCEAN DIVERS MARINA

Mile Marker 100



The largest single dive charter facility in the U.S., this operation can accommodate 240 scuba divers per day, plus night dives. Ocean Divers Marina is a combination dive store, marina,

dive boat fleet, complete with a huge scuba rental department, giant 100 cfm air compressor, air storage bank with 25,000 cubic feet of air, barbecue pit, picnic tables, and restaurant.

Owned and managed by Doc Schweinler and Joe Clark, Ocean Divers was established in 1975. Doc is certified PADI and L.A. County and has been diving since 1961. Joe also started diving in 1961 and is PADI certified. Ocean Divers caters to large dive groups coming in from practically every state, plus Canada and Europe. They can accommodate groups up to 40 divers.

### SEA TRAIL MOTEL

Mile Marker 98.5



This is a small hotel with eight rooms with accommodations for 20 guests. It is owned and operated by George Wielander, a certified PADI instructor. Primarily catering to experienced divers, this

operation offers good accommodations for budget-conscious travelers. The Sea Trail has its own dive boat, the *F-Stop* and handles six divers.



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- |  |  |
|--|--|
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| <input type="checkbox"/> BIOLOGY DIVES | <input type="checkbox"/> WRECK DIVES             |
| <input type="checkbox"/> WEEKDAYS      | <input type="checkbox"/> WEEKENDS                |
| <input type="checkbox"/> GROUP         | <input type="checkbox"/> INDIVIDUAL              |







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Key Largo, Fl. 33037

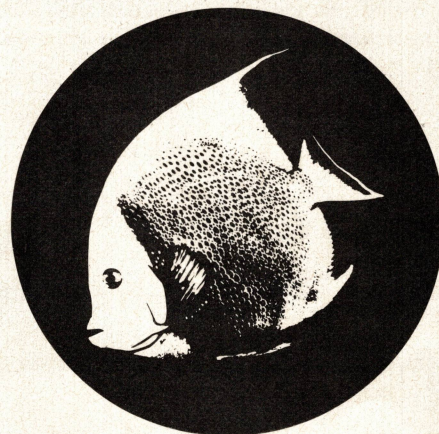


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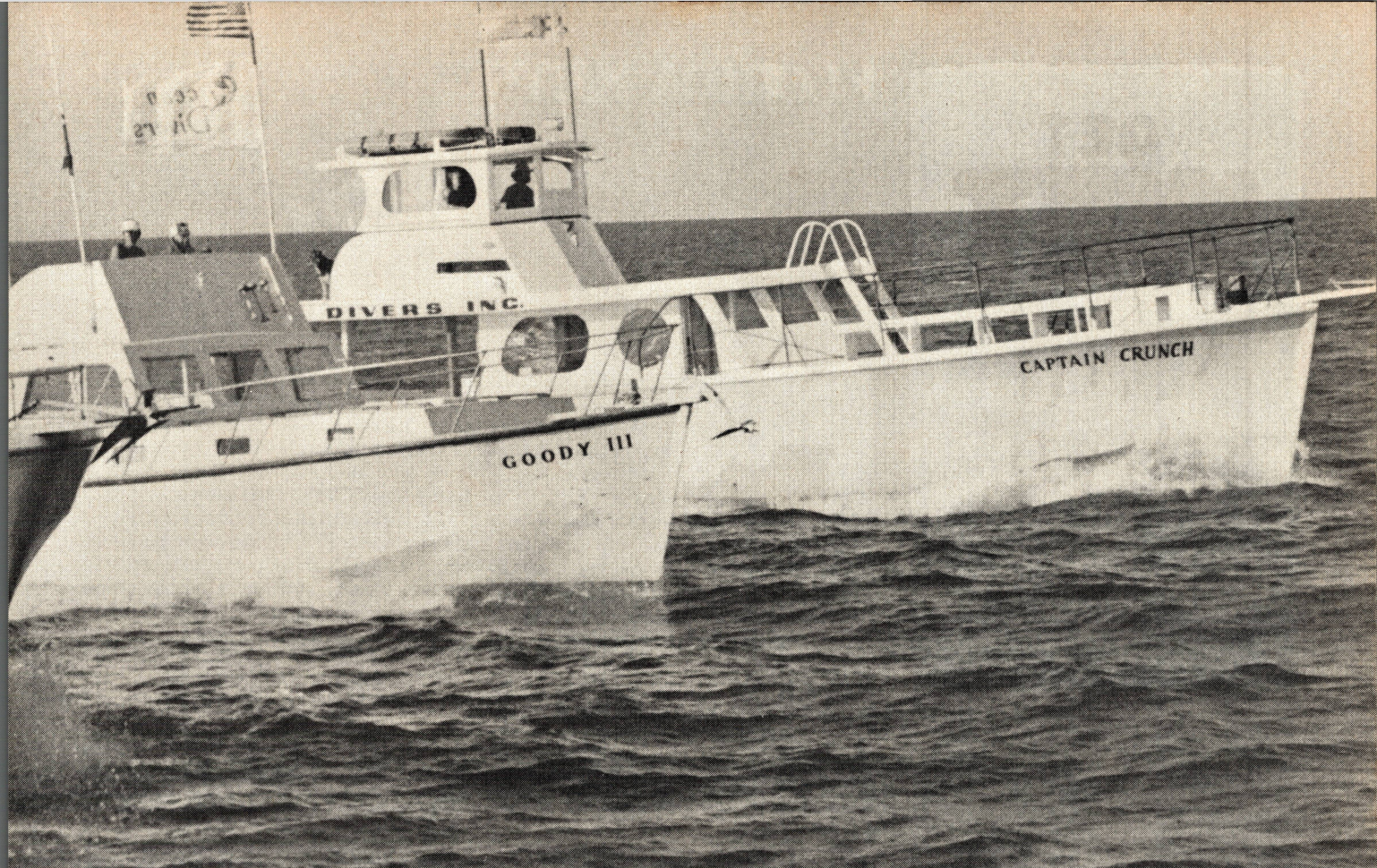
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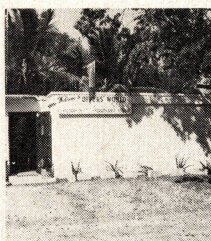
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## FLORIDA KEYS

THE REEF SHOP PRO DIVE CENTER  
Mile Marker 85

### DIVER'S WORLD OF KEY LARGO, INC. Mile Marker 97.5



Located off the main highway at Rock Harbor Marina, next to Mandalay Marina, is Diver's World. This is a small dive shop and dive trip operation, devoted to personalized service. They specialize in small groups or individuals and clientele is usually couples, singles and families.

Owned and operated by Emie Krumbein, Diver's World has been in business for one year. Emie is a PADI master scuba diver and was the former publisher of *The Buddy* newsletter for divers. The shop offers basic and advanced PADI certification classes.

### GOOD TIME DIVERS Mile Marker 95



Situated off the main highway at the marina, Good Time Divers is a fairly new dive shop concession. This operation caters primarily to Bryn Mawr guests, but also accommodates the public. Most of the divers that use these services are family groups. Run by Corky Toth, he is one of the few Key Largo dive operators who caters to spearfishermen and shell collectors.

### AQUANAUT CHARTERS Mile Marker 94



Aquanaut Charters is a brand new operation run by Glenn Ward, formerly with Bryn Mawr Camp Resorts. This is a small, personalized dive charter service that primarily caters to individual divers, shell collectors and snorkelers, with special shell dives to Conch Reef and wreck dives to Spanish galleons in 15 to 35 feet of water where guests find bits of broken pottery and other minor artifacts.

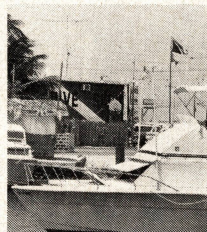


Established in 1972, the Reef Shop is a full service dive store with full repair services, tank tumbling, sales, rentals and instruction. There is a classroom on the premises and a freshwater pool at

a nearby hotel. Service is extremely personalized as the shop caters primarily to individuals, couples and small family groups.

The store is run by John and Patti Williams and John Hopkins. Jim is originally from Kansas City and has been diving since 1971. He is a certified PADI open water instructor and a PADI underwater photo instructor. The Reef Shop conducts separate snorkel trips to such reefs as Hens and Chickens, Davis and the Coral Garden, with depths from 3 to 12 feet.

### ABEL'S TACKLE BOX Mile Marker 84.5



Abel's Tackle Box is a combination fishing and dive business. There is a complete tackle shop, fishing charters, dive charters and snorkel trips. The dive operation caters primarily to

vacationing divers, families and individuals. Snorkeling equipment and accessories are for sale. The shop has been in business for 17 years and is run by Mike Abel who has been diving since 1958.

### HOLIDAY ISLE DIVE CENTER Mile Marker 84.2



A full service dive store, this shop has a full line of scuba gear, snorkeling gear, T-shirts, swimwear and accessories. The Holiday Isle caters primarily to individuals, tourists, and families.

Because of limited boat capacity, the service is very personalized. Normal dive trips are to reefs about 25 feet deep but there are special trips for experienced divers. The center also checks out students from dive shops from up north. Deep dives are all escorted by the skipper or the first mate. Night dives can be scheduled to either Davis Reef or Alligator Reef.

Although the shop has been in business for 10 years, it has been owned and managed by Ed Armstrong for the last four and one-half years. Robert Mathias is the skipper of the dive boat and formerly was a freelance photographer. Camera rentals are available for dive boat passengers.



**FRED & CINDY'S  
ATLANTIS MARINA**  
Mile Marker 68.5



The Atlantis Marina is a combination marina, bait and tackle shop, dive store, and boat rental facility. In operation for nine years, it has been managed by Fred and Cindy Skomp

for the past three.

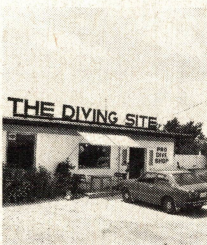
This dive operation caters primarily to campers, vacationing divers and family groups. Because of excellent shallow coral heads nearby, this shop is popular among snorkelers. The marina and shop are located on the highway, with the Zane Gray Creek in back of the shop.

**KEY COLONY DIVERS**  
Mile Marker 53.5



The Key Colony Divers is situated on the causeway between Highway #1 and the beach. It is a complete dive shop and services include air fills, scuba rentals, scuba sales, and boat trips. This facility caters to vacationing tourists, Florida divers, local vacation home owners and small groups of six or less. The owner is Laurie Russell and she is a certified PADI scuba instructor and licensed boat captain.

**THE DIVING SITE**  
Mile Marker 53.5

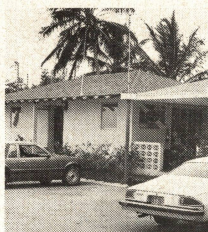


The Diving Site is located right on U.S. Highway #1, just south of Key Colony Beach causeway. This is a full service dive store with a large inventory of scuba gear and accessories.

There is a repair shop, tank inspection station and full machine shop. Tanks are hydrostatically tested on the premises. The dive operation caters to a cross section of diving clientele: individuals, groups, local residents, etc. Stock underwater photographic equipment includes: Ikelite, Farallon/Oceanic, Dacor, Sekonic, Nikons and Aquatica.

Ditmar Biller has been diving for 15 years and has been in business for the past eight years as owner of The Diving Site. He formerly owned Bonefish Bay Resort and speaks six different languages. The shop has five instructors and two of the staff are expert underwater photographers — Bob Tilman and Charlie Phinizy.

**CORAL LAGOON DIVE SHOP**  
Mile Marker 53.5



Located right on Highway #1, the Coral Lagoon Dive Shop is the oldest dive shop in Marathon, having been established 11 years ago. It is a combination dive shop, marina and

resort, and divers can park their boats in front of the hotel units. There are freshwater showers at the shop and lockers for storing gear. The store carries an inventory of Ikelite camera housings and camera rentals are available.

The Coral Lagoon Dive Shop caters to dive groups, dive clubs, schools and dive shops from up north. It also can accommodate families, individuals and couples. The dive shop is managed by Sheryl Stephenson. Scheduled trips leave twice daily for two tank dives departing at 8:30 am and 1:00 pm. Air fills are available.

**DIVERS HEADQUARTERS**  
Mile Marker 52



Divers Headquarters is located right on Highway #1 and has been in business for eight years. This shop caters to vacationing divers, mostly walk-in traffic. It is a small dive

store with a modest selection of dive gear and spearguns. The dive boat *Bank Shot* is skippered by John Lumley, who is ocean operator licensed. Owned and managed by Art McDermott, Divers Headquarters runs two scuba trips daily to the reefs.

**HURRICANE AQUA-CENTER**  
Mile Marker 50



Located right on the main highway, the Hurricane Aqua-Center is primarily a dive charter service which runs daily trips to Looe Key. There is a 47 room motel right behind the dive store.

Operated by Ed Davidson, a veteran diver of 12 years, the Hurricane Aqua-Center's primary business is dive and marine ecology groups. Ed is a dedicated marine environmentalist and has led the fight to save Looe Key from coral destruction. Looe Key is a favorite gathering place for giant tarpon and huge schools of fish. Ed is an enthusiastic proponent of making Looe Key into a marine sanctuary.

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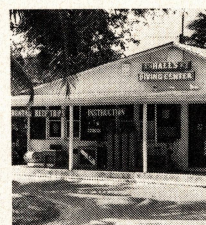
## FLORIDA KEYS

**TARPON LODGE**  
Mile Marker 49.5

The Tarpon Lodge is a 60 room luxury hotel and marina with a dive resort operation located right on the premises. The dive operation is in the center of the hotel complex, next to the swimming pool.

The dive center is basically a dive charter operation with air fill service and basic scuba training. The facility caters primarily to guests staying at Tarpon Lodge.

**HALL'S DIVING CENTER  
AND RESORT**  
Mile Marker 48



Located on the highway at the west end of Marathon, Hall's Diving Center can be found just before the famous Seven Mile Bridge. This is a combination full service dive center

and adjacent resort motel. The complex includes a 30 room motel, a large saltwater swimming pool, complete marina, boat launching ramp and fishing tackle store. The Diving Center is a modern retail dive store which includes a spacious scuba classroom complete with Scubapro video tape teaching program. The center has a large repair department with tank inspection.

Managers Bob and Linda Brayman are certified SCIP, PADI, and PDIC scuba instructors. Seven-day instructor training seminars are conducted every month.

**KNIGHT'S KEY DIVE CENTER**  
Mile Marker 47.5



**K**night's Key Dive Center is located at the west end of Marathon, just before the Seven Mile Bridge. The Dive Center is combined with a large campground and condo facility

which includes a restaurant, an old train exhibit and a boat launch ramp. The operation caters mostly to dive groups, dive clubs, and campground guests. They offer a wide selection of scuba training courses which are all PADI certified. There are no equipment sales.

The manager, Stefan Sykora, has been diving since 1957 and has been diving off Italy, Yugoslavia in the Adriatic and off Bulgaria in the Black Sea. Knight's Key Dive Center offers a unique bottle diving trip under the Seven Mile Bridge at slack tide. Divers frequently find square bottles dating back to 1895. Depths from 14 to 29 feet.



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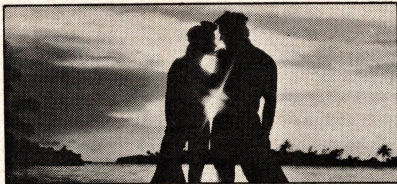
# FLORIDA KEYS DIVE OPERATORS

MILE MARKER	DIVE OPERATION	PHONE (305)	OWNER/MGR.	COMPRESSOR	RENTAL TANKS	AIR FILLS	DIVE BOAT NAME	SIZE & MAKE/CAPACITY	DEPART	TYPE TRIP	TRIP PRICE	SAMPLE DIVE SPOT
106.5	Capt. Slate's Atlantis Dive Center 51 Garden Cove Drive Key Largo, Fl. 33037	451-3020	Spencer Slate	Worth. 12 cfm	60 steel	\$2.00 (72's) \$2.50 (80's)	The Lost Continent The Atlantis Mayflower III	40 ft. Lindsay/40 divers 24 ft. Seabird/6 divers 37 ft. Sportfisher/34 divers	8:30 A.M. 1:00 P.M. 7:00 P.M. 8:30 A.M./1:30 P.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trips	\$18.50 \$18.50 \$20.00 \$16.50	The Statue Caystort The Elbow Benwood Wreck
105.5	Harry Keltz's American Diving Hqtl. Rt. #1, Box 2748 Key Largo, Fl. 33037	451-0037	Harry Keltz	Worth. 10 cfm Worth. 15 cfm	200 steel	\$2.25	American Diving I American Diving II Crosswinds Vitamin Sea	37 ft. Ensign/20 divers 37 ft. Sportfisher/22 divers 44 ft. Harrier Isid./20 divers 28 ft. Cary/6 divers	8:30 A.M. 1:00 P.M. 7:00 P.M. 8:30 A.M./1:00 P.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trips	\$20.00 \$20.00 \$20.00 \$16.50	Caystort Christ Statue The Elbow Molasses Reef
104	Sundivers Station Rt. #3, Box 289A Key Largo, Fl. 33037	451-0676	John Halas Gary Rinn	Worth. 15 cfm	60 steel	\$2.00	Sundiver Pandion	34 ft. Crusader/20 divers 24 ft. Stapleton/6 divers	8:30 A.M. 1:00 P.M. 7:30 P.M. 8:30 A.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trip	\$18.50 \$18.50 \$22.50 \$16.50	Molasses Reef French Reef Benwood The Elbow
104	Capt. Steve Klem U/W Guide Service P.O. Box 1803 Key Largo, Fl. 33037	451-1831	Steve Klem	None	12 steel	None	Mary Metro	25 ft. Pacemaker/6 divers	9:30 A.M.	2 Tank Dive	Full boat charters only \$150 per	The Elbow Caystort Molasses Reef French Reef
103.5	Key Largo Diving Headquarters Rt. #1, Box 293 Key Largo, Fl. 33037	451-1151	Terry Holderfield	Worth. 15 cfm Worth. 15 cfm Posidon 7.5 cfm	90 steel	\$2.00 (72's) \$2.50 (80's)	The Explorer Photo Diver III	50 ft. Navy Boat/44 divers 48 ft. Custom/49 divers	8:00 A.M. 1:00 P.M. 7:00 P.M. 8:30 A.M./1:00 P.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trips	\$20.00 \$20.00 \$25.00 \$15.00	Molasses Reef French Reef Benwood The Elbow
103.4	Bill Crawford's Tropic Isle Dive Shop P.O. Box 755 Key Largo, Fl. 33037	451-1063	Bill Crawford Charlie Crawford	Ingersoll 15 cfm Ingersoll 20 cfm	100 steel	\$2.00 (72's) \$2.50 (80's)	Good Time Charlie The Bottom Time	48 ft. Custom/38 divers 24 ft. Stapleton/6 divers	8:30 A.M. 1:00 P.M. 7:00 P.M. 8:30 A.M./1:00 P.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trips	\$18.50 \$18.50 \$22.50 \$15.00	Molasses Reef French Reef Benwood The Elbow
103	The Ocean Dive Center P.O. Box 1113A Key Largo, Fl. 33037	451-2645	Pam Dickinson	At other store location	At Ocean Divers Marina	\$2.00 (72's) \$2.50 (80's)		Dive Boats at Marina Store	8:30 A.M. 12:30 P.M. 6:30 P.M. 8:30 A.M./12:30 P.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trips	\$20.00 \$20.00 \$25.00 \$15.00	Molasses Reef French Reef Benwood The Elbow
102.5	Ocean Divers P.O. Box 1113A Key Largo, Fl. 33037	451-3737	Pam Dickinson	Worth. 15 cfm	At Ocean Divers Marina	\$2.00 (72's) \$2.50 (80's)		Dive Boats at Marina Store	8:30 A.M. 12:30 P.M. 6:30 P.M. 8:30 A.M./12:30 P.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trips	\$20.00 \$20.00 \$25.00 \$15.00	Key Largo Dry Rocks Caystort Pickles Reef
102	Coral Reef Park Co. P.O. Box 13M Key Largo, Fl. 33037	451-1621	Randy Pegram	Worth. 15 cfm Worth. 15 cfm	80 alum.	\$2.25	Infante El Capitan	61 ft. Custom/61 snorkelers 48 ft. Custom/49 snorkelers 32 ft. Custom/16 divers 30 ft. Custom/6 snorkelers	9:00 A.M. 1:00 P.M. 10:00 A.M. 2:00 P.M.	2 Tank Dive 2 Tank Dive Snorkel trip Snorkel trip	\$17.00 \$17.00 \$13.00 \$13.00	French Reef Benwood Grecian Rocks
101.5	Quiescence Diving Services Key Largo Kampground Box N13 Key Largo, Fl. 33037	451-2440	Bob Bleser Paul Caputo	Mako 9 cfm	30 steel	\$2.00 (72's) \$2.50 (80's)	Quiescence I Quiescence II	22 ft. Aquasport/6 divers 22 ft. Aquasport/6 divers	9:00 A.M. 9:00 P.M. 1:00 P.M. 1:00 P.M.	1 Tank Dive 2 Tank Dive 2 Tank Dive 2 Tank Dive	\$15.50 \$17.50 \$15.50 \$17.50	Molasses Reef French Reef Statue Benwood
100	Sea Dwellers P.O. Box 1796 Key Largo, Fl. 33037	451-3640 245-0333	T. J. Holub Larry Bateman	Worth. 15 cfm Worth. 15 cfm	125 steel	\$2.00 (72's) \$2.50 (80's)	Sea Dweller I Sea Dweller II	45 ft. Custom/20 divers 65 ft. Custom/49 divers	9:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	\$19.50 \$19.50	French Reef Molasses Reef Benwood Turtle Reef
100	Capt. Bob Klein's Holiday Inn Scuba Shop U.S. Hwy. #1 Key Largo, Fl. 33037	451-DIVE	Bob Klein	Mako 12 cfm	30 alum.	\$2.00 (72's) \$2.50 (80's)	Plus Ultra	50 ft. Cary/20 divers	9:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	\$22.50 \$22.50	Molasses Reef Statue Pickles Reef
100	Sea Fever Diving Cruises P.O. Box 1335 Key Largo, Fl. 33037	451-0005	Tom Guarino	Mako 5 cfm on board boat	20 steel	Not Available	Sea Fever	40 ft. Lindsay/17 divers	8:30 A.M. 12:30 P.M. 7:00 P.M.	2 Tank Dive 2 Tank Dive Night Dive	\$18.50 \$18.50 \$25.00	Molasses Reef French Reef Glass Minnow Hole Benwood
100	Ocean Divers Marina P.O. Box 1113A Key Largo, Fl. 33037	451-0286	Joe Clark	Ingersoll 100 cfm	225 steel	\$2.00 (72's) \$2.50 (80's)	Captain Crunch Ocean Diver Goody III	65 ft. Custom/48 divers 50 ft. Custom/36 divers 45 ft. Custom/28 divers	8:30 A.M. 12:30 P.M. 6:30 P.M. 8:30 A.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trip	\$20.00 \$20.00 \$25.00 \$16.00	Conch Reef Pin Wreck Sand Island
98.5	Sea Trail Motel Rt. #1, Box 91 Key Largo, Fl. 33037	852-8001	George Wielander	None	12 alum.		F-Stop	29 ft. Owens/6 divers	9:00 A.M.	2 Tank Dive	\$20.00	Pickles Molasses Reef French Reef
97.5	Diver's World of Key Largo, Inc. P.O. Box 1663 Key Largo, Fl. 33037	852-5498	Ernie Krumbain	Joy 13 cfm	25 steel	\$2.00 (72's) \$2.50 (80's)	Sea Spirit Fish & Fun Sea Spirit II	24 ft. Sealark/6 divers 22 ft. Makro/6 divers 26 ft. Sealark/14 divers	9:00 A.M. 1:00 P.M. 6:30 P.M. 9:00 A.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trip	\$19.00 \$19.00 \$25.00 \$15.00	Molasses Reef French Reef Benwood Pickles Reef
95	Good Time Divers Bryn Mawr Ocean Resort Rt. #1, Box 66J Key Largo, Fl. 33070	852-3002	Corky Toth	None	28 steel		Freetime Past Time	33 ft. Custom/18 divers 23 ft. Suncoast/6 divers	9:00 A.M. 1:00 P.M. 9:00 A.M. 1:00 A.M.	2 Tank Dive 2 Tank Dive Snorkel trip Snorkel trip	\$18.00 \$18.00 \$16.00 \$16.00	Pickles Outside Pickles Inside Benwood French Reef
94	Aquanaut Charters P.O. Box 459 Key Largo, Fl. 33070	852-9111	Glenn Ward	Ingersoll 15 cfm	80 mixed	\$2.00	Aquanaut Fun Diver Sea View	28 ft. Formula/6 divers 21 ft. Aquasport/6 divers 20 ft. Sea Sport/6 divers	9:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	\$16.50 \$16.50	Molasses Reef Pickles Reef Conch Reef El Infante



85	The Reef Shop Pro Dive Center Rt. #1, Box 7 Islamorada, Fl. 33036	664-4385	Jim Williams Patti Williams John Hopkins	Joy 14 cfm	24 mixed	\$2.00 (72's) \$2.50 (80's)	Sea Fun I Enterprise	31 ft. Sea Ray/6 divers 30 ft. Enterprise/6 divers 20 ft. Skiff/4 divers	9:00 A.M. 1:30 P.M.	2 Tank Dive 2 Tank Dive	Conch Reef Crocker Reef Davis Reef Alligator Reef
84.5	Abel's Tackle Box Rt. #1, Box 2 Islamorada, Fl. 33036	664-2521	Mike Abel	Worth. 17 cfm	18 mixed	\$2.00 (all)	Folly IV Miss Michelle	28 ft. Chris-Craft/6 divers 24 ft. Custom/6 divers	8:30 A.M. 1:30 P.M.	2 Tank Dive 2 Tank Dive	Alligator Reef Conch Reef Davis Reef Crocker Reef
84.2	Holiday Isle Dive Center P.O. Box 482 Islamorada, Fl. 33036	664-4145	Ed Armstrong	Mako 20 cfm	50 steel	\$2.50 (all)	Restless Too	34 ft. Hatteras/6 divers	9:00 A.M. 1:00 P.M. 7:30 P.M.	2 Tank Dive 2 Tank Dive Night Dive	Davis Reef Alligator Reef No Name Reef Conch Reef
68.5	Fred & Cindy's Atlantis Marina 105 Overseas Hwy. Long Key, Fl. 33001	664-4318	Fred Skomp	Worth. 12.5 cfm	18 steel	\$1.50 (72's) \$2.00 (80's)	Atlantis	24 ft. Fibra/6 divers	9:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	Patches Reef Tennessee Alligator Reef
53.5	Key Colony Divers Key Colony Causeway Key Colony Beach, Fl. 33051	289-1141	Laurie Russell	Worth. 12.5 cfm	27 steel	\$1.50 (all)	Alless	24 ft. Wellcraft/6 divers	9:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	Paradise Reef Sombro Reef Atlantis Reef Erudite Reef
53.5	The Diving Site 12565 Overseas Hwy. Marathon, Fl. 33050	289-1021	Ditmar Biller	Worth. 16 cfm Worth. 12 cfm	35 steel	\$1.00 (72's) \$1.50 (80's)	Bugalo The Other Boat	40 ft. Custom/20 divers 31 ft. Chris-Craft/6 divers	8:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	Sombro Reef Delta Shoals Yellow Rocks The Doughnut
53.5	Coral Lagoon Dive Shop 12399 Overseas Hwy. Marathon Shores, Fl. 33050	289-0123	Sheryl Stephenson	Worth. 15 cfm Worth. 15 cfm	40 steel	\$1.50 (72's) \$2.00 (80's)	Coral II Coral III	30 ft. Scottcraft/6 divers 34 ft. Crusader/20 divers	8:30 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	Inner Reefs The Bridge Yellow Rocks Sombro Reef
52	Diver's Headquarters 11511 Overseas Hwy. Marathon, Fl. 33050	743-4501	Art McDermott	Ingersoll 15 cfm	17 mixed	\$1.25 (72's) \$1.50 (80's)	Bank Shot	25 ft. Sea Ray/6 divers	8:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	Coffins Patch West Turtle Shoal Yellow Rocks
50	Hurricane Aqua-Center Hurricane Resort Motel 4650 Overseas Hwy. Marathon, Fl. 33050	743-2400	Ed Davidson	Worth. 17 cfm Mako 19 cfm	45 alum.	\$1.50 (72's) \$2.00 (80's)	Reef Rover II	64 ft. Alum. Cust./49 divers 24 ft. Aquasport/6 divers	10:00 A.M. 10:00 A.M.	2 Tank Dive Snorkel trip	Loose Key Shallow Loose Key Deep Loose Key Ledge Sombro Reef
49.5	Tarpon Lodge 4590 Overseas Hwy. Marathon, Fl. 33050	743-5555	Frank Manson	Ingersoll 8 cfm	20 steel	\$1.75 (72's) \$2.50 (80's)	Reef Raider II Photo Diver	30 ft. T-Craft/6 divers 28 ft. Custom/6 divers	9:00 A.M. 1:00 P.M.	2 Tank Dive 2 Tank Dive	Sombro Reef Delta Shoals
48	Hall's Diving Center and Resort 1688 Overseas Hwy. Marathon, Fl. 33050	743-5929	Bob & Linda Brayman	Worth 15 cfm	50 steel	\$2.00 (all)	Lady Key Diver I Lady Key Diver II	37 ft. Ensign/22 divers 28 ft. Enterprise/6 divers	9:00 A.M. 2:00 P.M. 9:00 P.M.	2 Tank Dive 2 Tank Dive Night Dive	Sombro Reef Loose Key Delta Shoals Staghorn Acres
47.5	Knigh's Key Dive Center P.O. Box 525 Marathon, Fl. 33050	743-9994	Stefan Sykora	Worth. 13.2 cfm	20 mixed	\$1.25 (72's) \$1.50 (80's)	Knight's Key Diver	25 ft. T-Craft/6 divers	9:00 A.M. 2:00 P.M. 9:00 P.M.	2 Tank Dive 2 Tank Dive Night Dive Snorkel trip	Sombro Reef Delta Shoals Seven Mile Bridge Loose Key
30.5	Underseas, Inc. U.S. Rt. #1, Box 319 Big Pine Key, Fl. 33043	872-2700 872-9555	George & Maryanne Rockett	Worth. 20 cfm Worth. 20 cfm	75 mixed	\$1.50 (72's) \$1.75 (80's)	Endeavor Enterprise Explorer	40 ft. Custom/6 divers 36 ft. Custom/6 divers 40 ft. Custom/6 divers	8:30 A.M. 10:00 P.M. 7:00 P.M.	2 Tank Dive 2 Tank Snorkel 2 Tank Dive Night Dive	Loose Key Fingers Loose Key Wreck Loose Key Shallow Loose Key Deep
30	Keys Sea Center, Inc. P.O. Box 515 Big Pine Key, Fl. 33043	872-2243	Carl Aufrecht	Worth. 20 cfm	20 steel	\$1.50 (72's) \$2.00 (80's)	Tanaray Starfish	35 ft. Custom/6 divers 30 ft. T-Craft/6 divers 31 ft. Island Hopper/6 divers	9:00 A.M. 9:00 A.M.	2 Tank Dive Snorkel trip	Loose Key Shallow Loose Key Deep Big Pine Heads Coupon Bight
11	Key West Seaside Marina Key West Seaside Park U.S. #1 & Boca Chica Rd. Key West, Fl. 33040	296-6888	Dick Farkas	Mako 4.5 cfm	12 alum.	\$2.00 (72's) \$2.50 (80's)	Sea Biscuit We Five Dolphin	26 ft. Pontoon/6 divers 29 ft. Omega/6 divers 26 ft. Cobra/6 divers	9:00 A.M. 9:00 A.M.	2 Tank Dive Snorkel trip	Middle Sambo Eastern Sambo Western Sambo Pelican Shoals
5	Angler's Dive Shop U.S. #1, Stock Island Key West, Fl. 33040	294-4248	Bob Harland	Joy 15 cfm Joy 15 cfm	15 alum.	\$2.00 (72's) \$2.50 (80's)	Coral Sands Sambo	32 ft. Custom/6 divers 25 ft. Custom/14 divers	9:00 A.M. 9:00 A.M.	2 Tank Dive Snorkel trip	Middle Sambo Eastern Sambo Pelican Shoals
4.5	Reef Raiders Dive Shop U.S. #1, Stock Island Key West, Fl. 33040	294-0660	Franco Piacibello	Ingersoll 18 cfm	45 steel	\$2.00 (72's) \$2.50 (80's)	Key West Diver	34 ft. Custom/18 divers	9:00 A.M. 1:30 P.M. 9:00 A.M.	2 Tank Dive 2 Tank Dive Snorkel trip	Pelican Shoals Eastern Sambo Middle Sambo Western Sambo
2.5	Pioneers Dive Shop Hilton Haven Motel P.O. Box 333 Key West, Fl. 33040	296-3044	Tom Garrick	Worth. 18 cfm	18 mixed	\$2.00	Great White	23 ft. Mako/6 divers	9:00 A.M. 2:00 P.M. 9:00 A.M.	2 Tank Dive 2 Tank Dive Snorkel trip	Western Dry Rocks The Sand Bar Satan Shoals Marquesas
2	Key West Pro Dive Shop, Inc. 1605 No. Roosevelt Blvd. Key West, Fl. 33040	296-3823	Bob Holston	Worth. 15 cfm Worth. 10 cfm Mako 6 cfm	60 steel	\$2.00 (72's) \$2.50 (80's)	Aquaventure Key Comber	60 ft. Custom/49 divers 45 ft. Custom/34 divers	1:00 P.M. 1:00 P.M.	2 Tank Dive Snorkel trip	Sand Key Rock Key Eastern Dry Rocks Western Dry Rocks
0	Reef Raiders Dive Shop 109 Duval St. Key West, Fl. 33040	294-3635	Franco Piacibello	Compressor at other store	At other Store	\$2.00 (72's) \$2.50 (80's)	Nautilus	48 ft. Custom/48 divers	9:00 A.M. 1:30 P.M. 9:00 A.M. 1:30 P.M.	2 Tank Dive 2 Tank Dive Snorkel trip Snorkel trip	9 Foot Stake Cosgrove Shoals Dry Tortugas Western Dry Rocks





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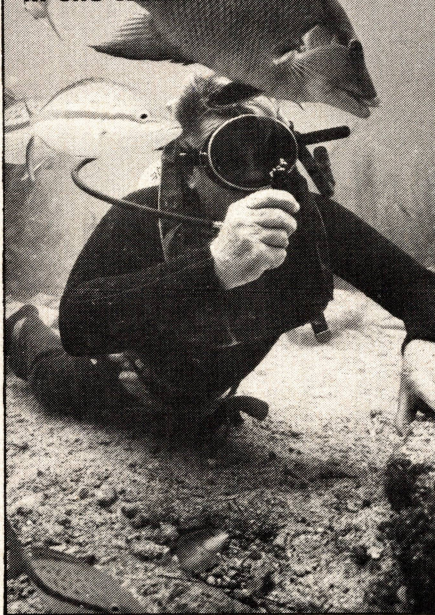
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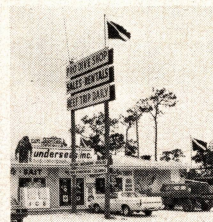
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## FLORIDA KEYS

**UNDERSEAS, INC.**

Mile Marker 30.5



**U**nderseas, Incorporated is located right on U.S. Highway #1 and has been in business for 10 years. This is a full service dive shop with a large inventory of scuba gear, BC's, spear-

guns, and accessories. The operation caters to small groups, families, Keys residents and individuals.

George and Maryanne Rockett own and manage Underseas, Inc. and they are formerly from Philadelphia. George has been diving for over 25 years and is a certified PADI instructor. There are three diving instructors on staff.

**KEYS SEA CENTER, INC.**

Mile Marker 30



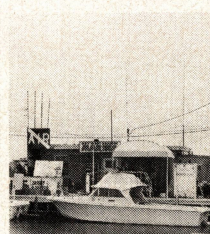
**T**he Keys Sea Center, Inc. is situated right on the main highway at the west end of Big Pine Key. It is part of a complete marina service center which includes: boat storage, marine parts

and accessories, marine engine repair, and boat launching.

Managed by Carl Aubrecht, the Keys Sea Center caters to small groups, couples and individuals. Carl is an avid underwater photographer and has been teaching underwater photography for four years. He has researched and developed a series of underwater flash exposure guide tables in the form of chrome/mylar stickers. The stickers will adhere to strobe or camera and are available for eight different tables. Carl is a certified YMCA and PADI instructor.

**KEY WEST SEASIDE MARINA**

Mile Marker 11



**S**ituated 200 feet off the main highway at the Seaside Park Campground is the Key West Seaside Marina. This facility is a combination marina, bait and tackle shop, dive charter

service, and air station. There is also a large display of seashells, coral and artifacts from the sea. The dive operation primarily caters to tourists staying at Seaside Park or in Key West.

# THE DIVING SITE



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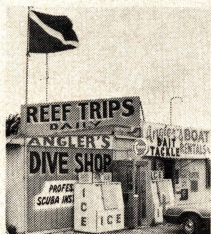
Phone 305/289-1021

12565 Overseas Highway, Marathon, Florida 33050



The Key West Seaside Marina is owned and operated by Capt. Dick Farkas. Dick has been diving since 1951 and is a certified PADI diver. PADI and YMCA classes are conducted at the marina in the freshwater pool by scuba instructor Phil DeClue.

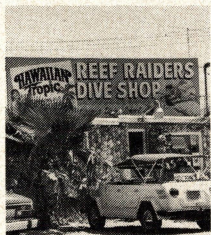
### ANGLER'S DIVE SHOP Mile Marker 5



**A**ngler's Dive Shop has been in operation for nine years and is located right on the highway at the east end of Stock Island, five miles south of Key West. It is a combination dive shop, bait and tackle shop, boat rental facility and dive charter service. The dive shop has a large air fill station and carries a small inventory of scuba gear. Scuba regulator repairs, tank inspections, and hydrostatic testing is available.

Managed by Bob Harland, Angler's Dive Shop caters to local residents, Florida divers, vacationing divers from the north, Canada and Europe.

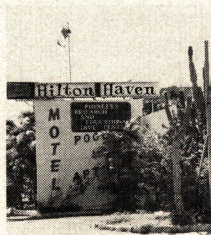
### REEF RAIDERS DIVE SHOP Mile Marker 4.5



**T**he Reef Raiders Dive Shop is located right on the main highway. It is a full service dive shop with a complete inventory of scuba gear, spearguns and accessories. This shop has a full repair department with parts for U.S. Divers, Dacor, Sportsways, Swimaster and Healthways. There is a complete air fill station with 8000 cubic feet of air storage. The dive shop has a staff of six scuba instructors, and more on busy weekends.

Owner and manager of the Reef Raiders Dive Shop is Franco Piacibello. Franco learned to dive 27 years ago in the Mediterranean. The shop caters primarily to dive groups, individuals, families, vacationing divers and Keys' residents. The 34 foot custom dive boat handles up to 18 divers and departs twice daily for two tank dive trips.

### PIONEERS DIVE SHOP Mile Marker 2.5

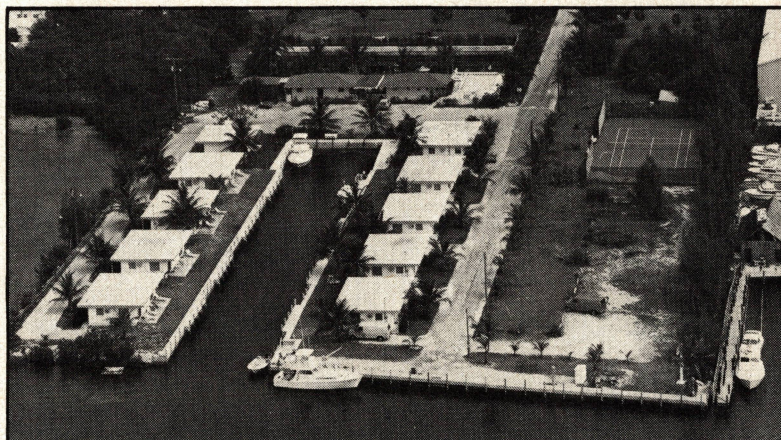


**T**he Pioneers Dive Shop is located in the middle of the hotel grounds at the Hilton Haven Motel in Key West. Basically it is a dive charter service with a small inventory of rental gear for guests

# Coral Lagoon

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The Keys first resort built for divers. Our large dive shop has everything for either families or dive groups — complete inventory of all diving gear for sale at **reasonable** prices, adequate supply of rental tanks, regulators, weight belts, cameras, spearguns, BC's, wet jackets, snorkeling gear, etc. and 2—4000psi compressors. Two custom fiberglass dive boats (20 passenger and 6 passenger) are available for AM, PM or night dives. 16 clean, comfortable efficiency units are all air conditioned with room phones and color TV. Each unit has its own dock (for divers with their own boats or who wish to rent a boat) and a large outside patio with hibachis furnished.



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## FLORIDA KEYS

of the hotel. The shop has a nice display of old bottles and artifacts from the sea. The dive shop caters primarily to experienced divers and runs custom dive charter trips for small groups of two to six people.

Tom Garrick, owner and manager of the Pioneers Dive Shop has been diving for 16 years and is a certified YMCA instructor. Tom runs shell collecting trips to the back country, Atlantic reefs, and old bridges.

### KEY WEST PRO DIVE SHOP, INC. Mile Marker 2



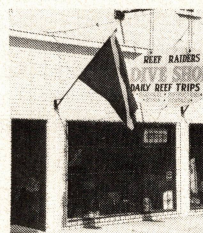
**L**ocated right on U.S. Highway #1, the Key West Pro Dive Shop has been in business for 12 years. It is a full service dive store, complete with sales, instruction, repairs and trips. It

has a complete regulator repair department, tank inspections and hydro testing. The shop offers a six week open water certification course, plus private lessons. The classroom is in the same building and the dive boats are parked right next to the store.

Bob Holston has owned and operated the Key West Pro Dive Shop for the past six years. He is a certified NASDS, NAUI, and PADI scuba instructor and has been diving since 1968.

The shop caters to resident divers living in the Key West area and offers dive trips for vacationing certified divers visiting the area. Bob runs special two to five day trips to the Dry Tortugas, a national underseas monument and coral reef park. He has a permit to go ashore on Dry Tortugas. The boat has freshwater showers, and rinse basins for cameras.

### REEF RAIDERS DIVE SHOP Mile Marker 0



**T**he Reef Raiders Dive Shop is a recently opened satellite store of Reef Raiders at Stock Island. It is located at the end of Duval Street in old Key West next to the pier. It is basically a

retail dive store and boutique. Scuba instruction is available for introductory, basic, open water and advanced classes. YMCA or PADI certification available.

The dive boat is available for special charter to the outer reefs of Key West, the Dry Tortugas, and the WW II gulf wrecks. The wrecks lie in 70 feet of water. An Ingersoll-Rand 18 cfm compressor is on board for tank air fills.



# KEY WEST PRO DIVE SHOP inc.

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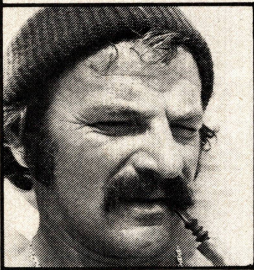
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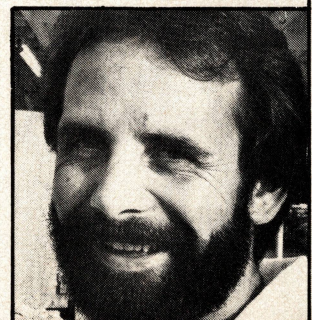
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At 10 am on the 29th, Divers Unlimited's treasure ship, the *Dolphin One*, will cruise just offshore scattering about 100 doughnut-sized coins on the shallow reef.

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Afterward all participants and their guests are invited to an after dive party at Divers Unlimited's new dive facility on the intracoastal waterway. Divers Point is well situated, with good access from beach, boat, or car. It features a picnic area with barbecue grill and tables, ice and soft drinks, a bathroom and freshwater shower, an air fill station with dockside service and complete scuba rental. Divers Point is also home port for the 40 foot *Dolphin One* and her sister ship the *Sunchaser*, the only two boats operating out of Port Everglades. They are available to divers for day or night diving all year long. Skipper Bob Osborne has charted all the local reefs and wrecks.

The treasure hunt is open to all certified divers free of charge. All you have to do is stop by Divers Unlimited at least 24 hours before the dive and register. You will be required to show your C-card at this time. Check in at the beach station on Sunday, July 29 and you're ready to go. All divers must have a BC and an SPG and each buddy team is required to have a dive flag attached to a float.

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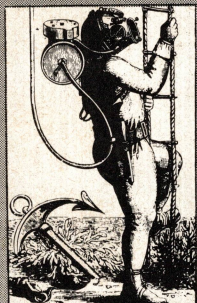
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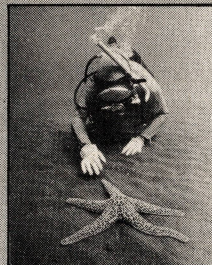
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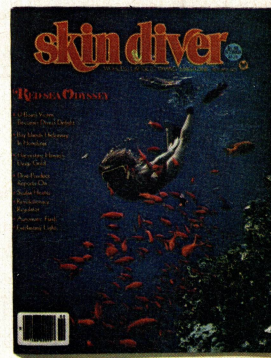
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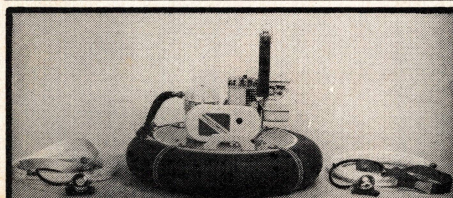
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# Technifacts

BY E. R. CROSS

The basic purpose of this column is to stimulate an interest in the technical aspects of diving and in dive safety. It will be devoted to providing factual answers to questions from SKIN DIVER readers. Answers will apply to the majority of dive situations, problems, and equipment encountered in today's diving.

For their questions or comments used in this month's Technifacts, I would like to thank Fred Bruce, Boca Raton, FL; S. M. Singleton, Brewster, MA; Michael Bridges, Conover, NC; Mike Smith, Pasadena, CA; D. D. Freeman, Garland, TX; W. H. Markham, Jacksonville, FL; and Gene Gable, Alhambra, CA.

## DECOMPRESSION PROBLEMS

A reader wrote recently describing the diving pattern of his and his partners, the use of decompression meters, and the rather radical difference in what the meters read and what the tables indicated the divers should have in the way of decompression. In his letter he stated, "I will describe the diving habits that I and two other divers have, then ask for your comments. We dive an average of once a week on a reef that is 65 feet deep at the base of the drop-off and rises up toward the surface a distance of from 2 to as much as 15 feet. Our pattern is always the same: a 45 minute bottom time for the first dive; a 90 minute surface interval; another dive of 45 minutes; surface without decompression. We each use a decompression meter and all of them have always indicated that we are in the safe zone and require no decompression stops. After reading an SDM editorial we became worried about this and worked out the Navy tables for our diving pattern. The tables indicated we would require an 8 hour surface interval between dives to the deepest point (65 feet) to avoid decompression on the second dive. Or, looking at it in another way, we would have to have a decompression stop at ten feet for 23 minutes if we followed our present dive pattern, I would like answers to such questions as: Why the large discrepancy between the decompression meter and the tables? Is our diving pattern a safe one? Are there any cases of bends in divers who carefully follow the decompression meters?"

Probably the cause of the discrepancy between the decompression requirements indicated by the meters and as required by the tables is that your diving is not all at a depth of 65 feet. Yet, since this is the deepest point in your dive, you must use this for entering the Navy decompression table (actually 70 feet since this is the next greatest depth). You stated you followed the contour of the reef



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which would make your diving depths something between 50 and 65 feet. Decompression tables to compensate for a variable depth dive are not available and would be quite unwieldy if they were. As a result, in the use of the Navy tables, you must use the greatest depth reached for the total time of the dive. Also it is impractical for a diver to keep a record of time at various depths and try to work out decompression requirements. A decompression meter, on the other hand, is recording gas transfer at a rate depending on actual depth. If your depth changes, so does the rate of gas transfer and the rate the meter arrow moves toward indicating a need for decompression. This could easily be the reason for the discrepancy in the two decompression requirements.

And, even though the actual depth to the bottom might be 65 feet (or 50 feet to the top of the reef) a diver would almost never be at those depths because he swims above the actual ocean bottom by anything from two to several feet. Even though you may be near the bottom of the reef drop-off you may be no deeper than 60 feet.

It is in rapidly changing, multi-depth dives that a decompression meter proves of greatest value. In the case of you and your two buddies, each with a meter, it is easy to check accuracy. By comparing the meter readings you can tell almost immediately if an error does develop in one of them.

If all three decompression meters in use indicate you are in the no decompression range, your dive pattern is, subject to the comments in the following paragraphs, safe. As a check, try to evaluate your average depth-time for one of your dive patterns and then check against the tables for that average. I am sure you will find the tables and the meters will not be far apart.

My commercial diving work, involving myself as a diver plus as many as six other divers on some jobs, is such that we make many multi-depth, multi-time dives in a day. It would be absolutely impossible to work tables for such diving. My policy is that all divers must use a decompression meter to indicate when they are nearing no decompression limits. We also keep a dive log and if a meter becomes erratic, as they very infrequently do, the diver with the erratic meter goes on the tables or quits diving for the day if the meter indicated he was near the no decompression limit.

My recommendation in the use of decompression meters is that if only one meter is used by two or more divers *working exactly together*, use that meter only as a warning to avoid decompression and as a check to see if you worked the tables correctly. If two or three divers are working together, again, *exactly together*, and all divers have meters that are reading the same, use the meters to control the dive and decompression pat-

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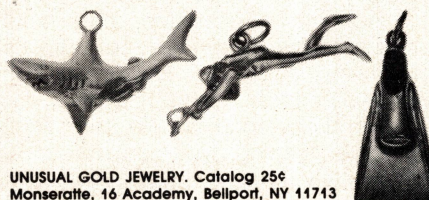


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## TECHNIFACTS

tern and the tables as a record in the event of a meter malfunction.

Commercial divers have much better support equipment and better trained and qualified personnel than is usually the case in sport diving. OSHA regulations for commercial diving prohibit any diving deeper than 60 feet or at any depth requiring decompression unless a recompression chamber is on board the dive platform. It is obvious then that sport divers should scrupulously avoid getting into, or nearly into, decompression diving. A decompression meter is invaluable in accomplishing this. Support personnel and equipment is so minimal in sport diving that the possibility of an accident is sometimes intensified. Avoidance of decompression diving becomes even more critical when support personnel and equipment required to treat dive accidents are not readily available.

Have divers ever been bent while using decompression meters? The answer is yes, they have. The two cases I know of involved divers who had made repetitive dives, all of which were up to the no decompression limit as indicated by the meters. It is in making several repetitive dives that almost involve the need for decompression stops that the meters are most likely to lead the diver into problems. However, keep in mind that there have also been many cases of bends in divers who faithfully followed the decompression tables. Again, these bends cases usually involved divers who made repetitive dives to the near no decompression time limit, or who actually got into decompression stop diving.

Finally, keep in mind that no instrument or table will keep you safe if you disregard the results of that meter or table. Absolutely no one is immune to accidents if safe procedures are ignored.

## THE MARK 15

The MK-15 diving outfit is the U.S. Navy's designation for an advanced underwater breathing apparatus adapted from the Biomarine Industries CCR-1000 closed circuit, mixed gas, self-contained underwater breathing apparatus. The Navy's EX-16 and EX-17 are also adaptations of the Biomarine unit. All three modifications or adaptations are designed to permit military divers to work on specialized dive missions to depths of 300 meters (about 975 feet).

The Biomarine Industries CCR-1000 scuba outfit is a lightweight, closed circuit rebreather that permits diving at a depth of 300 meters for six hours. It was first used by commercial divers and then adapted to specialized military needs.

The CCR-1000 stores 18 cubic feet of oxygen at a pressure of 3000 psi. Helium and probably traces of other gases serve as diluent gases. It is a two chambered



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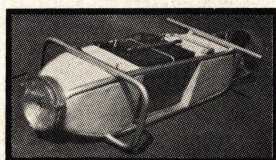
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unit, one chamber carrying the oxygen with its separate hose, the other the diluent gas also with its own hose system. Both hoses feed gases into the breathing chamber where they are mixed and become a respirable gas. A CO<sub>2</sub> absorbing system scrubs the expired gas for re-breathing and there is no gas exhausted from the unit while in use.

The Biomarine Industries' CCR-1000 UBA and the Navy's MK-15, EX-16 and EX-17 look nothing like conventional scuba. Also they are not available for sport diver use because of both cost and complexity. Finally, the cost of support equipment and personnel that would permit use of these systems make the units impractical for sport use.

### SWIMMER PROPULSION UNIT

There is a continuous trickle of letters to Technifacts requesting information on parts, etc., for building a swimmer propulsion unit (SPU). Basically, readers want enough information so they can construct a unit and the problem is principally in where to find the necessary plans and parts needed to do the job. In reply to those readers who have written in the past several months, try your local library for a copy of Popular Mechanics for July, 1974. I checked in the local library, found the issue in question and reviewed the article. It should permit a reasonably talented, mechanically inclined person to build an SPU. In 1974 Popular Mechanics had full scale plans available for this unit. Write the magazine for current availability. Five years is a long time.

More recently a reader wrote saying, "I secured plans from Popular Mechanics and built one of the SPU's in my spare time at a cost of about \$150. I have been well pleased with the performance of this unit and would recommend it to anyone interested."

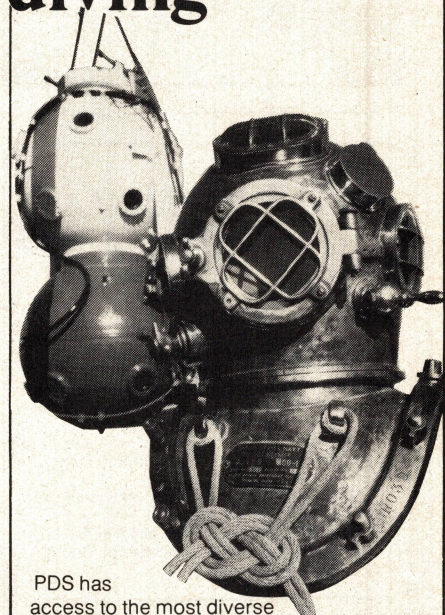
I still have not been able to find plans for a one or two man dry type submersible. Can readers help with this?

### SKIN DIVER BACK ISSUES

"In the February issue of SKIN DIVER you referred to an article in an issue that was several years old. Other writers also do this occasionally. My question is, where do I get back issues?"

SKIN DIVER has back issues for recent years. Try your local library for earlier years. Back issues are also available in limited numbers from individuals who have spare copies. Dr. Samuel Miller, 5031-H E. Orangethorpe Ave., Anaheim, CA 92807, has a large collection. Dr. Miller states he is interested in either trading for other issues or in selling his spare copies. Write him direct. In addition, I have several hundred copies of various issues plus other dive magazines that I will sell. I am not interested in exchanges. Write to me, E. R. Cross, P.O. Box 212, Pearl City, Hawaii 96782 for lists. Or, if you are interested in only one or two copies, state which copies you need.

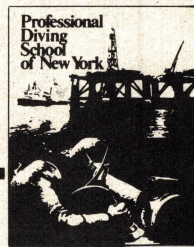
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The Ocean Corporation first performed underwater repair work in a nuclear reactor in 1973. This first job was carried out at the Palisades Nuclear Station, South Haven, Michigan. Since then, The Ocean Corporation divers and surface support personnel have performed work at a number of nuclear installations around the country.

A nuclear team will usually consist of a dive supervisor and three divers. The supervisor coordinates and manages the activities and the divers carry out actual work duties as well as equipment management, communications and dive station operations, and safety procedures.

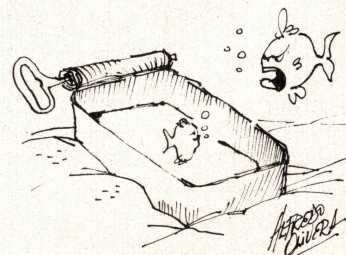
All team members are college trained, certified professional divers with experience in every aspect of underwater work. Many of The Ocean Corporation underwater technicians are specialists in a particular facet of their profession, but all are qualified and capable of accomplishing any underwater task.

The Ocean Corporation divers and surface support personnel have accumulated approximately 7000 on-site man hours while completing 106 dives in reactor vessels and spent fuel pools.

In the almost 5000 man hours in containment, The Ocean Corporation has performed a variety of services for contractor and utility alike. Not only have the underwater technicians made installations and carried out repairs on virtually every aspect of the fuel transfer carriage assembly, but they have provided an up-close, hands-on visual inspection of the equipment and superstructure looking for stress, wear and fatigue.

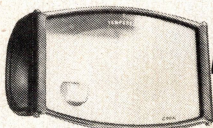
This hands-on inspection, augmented with video camera coverage relaying a picture topside, places the diver as a natural and valuable extension of the project engineer. The Ocean Corp. pioneered this partnership of engineer and diver and it has been enormously successful.

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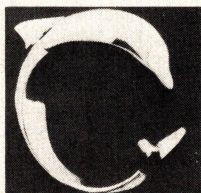
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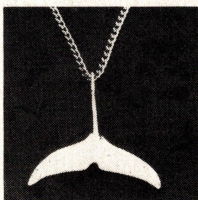
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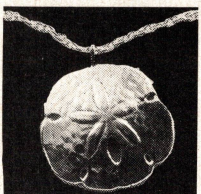
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## JAMAICA TREAT

BY LES KAUFMAN

I am an ecologist, but my passion is coral reefs. Any reef will do: fossil or living, above or beneath water, for they all crawl with life-on-life, throbbing sounds and colors. Some are quieter than others, more subtle, but each replete with sufficient diversion to hold a diver's fascination for weeks. Of the reefs I've been fortunate to work in the Caribbean, those of Jamaica vie for an easy first place, as much for the island of which they're a part as for their own stupendous grandeur.

The north coast is characterized by a very close island shelf — water in excess of 1000 feet deep is often only a few hundred yards offshore. The edge of the drop-off can be a sheer wall, as at Rio Bueno, or a phenomenal fairyland of caves, pinnacles, chasms and gorges. This world is most accessible from the doorstep of the Chalet Caribe Hotel where one swims out along a marked line to the drop-off, on a slow descent to about 40 feet. This shallow reef platform lies beneath a rich veneer of corals, making for good snorkeling and providing a perfect, graded incline for slow and easy decompression. The specialty here is pillar coral in large fanciful towers, furry with outreaching polyps. Because of the close proximity of extremely deep water environments, many rare and deep-dwelling fishes can be watched at leisure in shallow waters. Longnose butterflyfish and sunshine damselfish are among the wall dwellers living brazenly above Montego's drop-offs. The golden hamlet, a Jamaican treat, seems to revel in the most rugged and varied dense-coral terrain.

One can swim a bit south and east along the drop-off to hover above a gaping hole. The reef simply drops out beneath you, and the deep fingers your soul, luring you down among the rising walls of coral. Your descent of an additional 40 feet into the heart of the reef, is also a warp to another time. Turn on your flashlights, very carefully adjusting your buoyancy so that a breath can hold you, and slip beneath the roof of the first chasm. Now, with great care not to kick up the silt at the cave bottom — in fact, refrain from finning altogether and use your buoyancy to move about — turn your light up and grope carefully along the walls of the enclosure. There! That orange globe, like sherbet dashed against the cave wall, those tiny yellow ears, and red curlycles — they're all over the place! Sclerosponges. With massive calcium-silica skeletons much denser than those of the corals, and a superficial layer of tissue barely millimeters thick on an active specimen, these bizarre sponges are the major framework builders on the reef in waters below 200 feet and in secret, hidden places toward the shallows, as in this cave. The sclerosponges are allied to stromatoporoids, a group of sponges that once built great reefs in shallow water, but were thought to have disappeared entirely from the scene many millions of years ago. Yet here are their brethren, pushed into shadows by modern, aggressive, fast-growing stony corals.

One can spend his or her entire dive within the bowels of this reef, emerging only briefly to turn corners into the next



Deep water is only a few hundred yards off Jamaica's north coast. The reef simply drops out beneath you.

passageway or take account of one's buddies. The call of the reef face is siren, though, and the temptation to pop out of a dark tunnel to turn back and gawk, irresistible. Don't resist. You will look up on a sunny afternoon to glories of sunlight streaming through eerie waters like so many laser beams. Big blocks of plating (foliaceous) corals, cabbages of *Agaricia undata* festoon the reef walls and pinnacle tops. Precious black coral droops from precarious holds under coral saucers and ledges. Immense sponges trumpet forth from the reef face, or glow electric pink-violet in the eclipsed light.

On the other side of the Bay is one of the finest shallow reefs in creation — Old Airport Reef. The airport reefs are the first bit of submarine Jamaica you are likely to see as you land at Montego Bay, and perhaps the place that will provide your most lasting memories. Airport is a real gourmet's reef — tame, quiet, benign and no deeper than 30 feet. It is full of nooks, crannies, and the intense relief one comes to expect of the Jamaican scene. Airport may have the best-developed spur and groove system of the classic sort to be seen in Jamaica — very similar to Florida's Molasses and French reefs, but on a more commanding scale. Much of the underlying framework of this reef appears to be a relict of earlier growth, and the internal workings are laid bare to any inquisitive diver with a

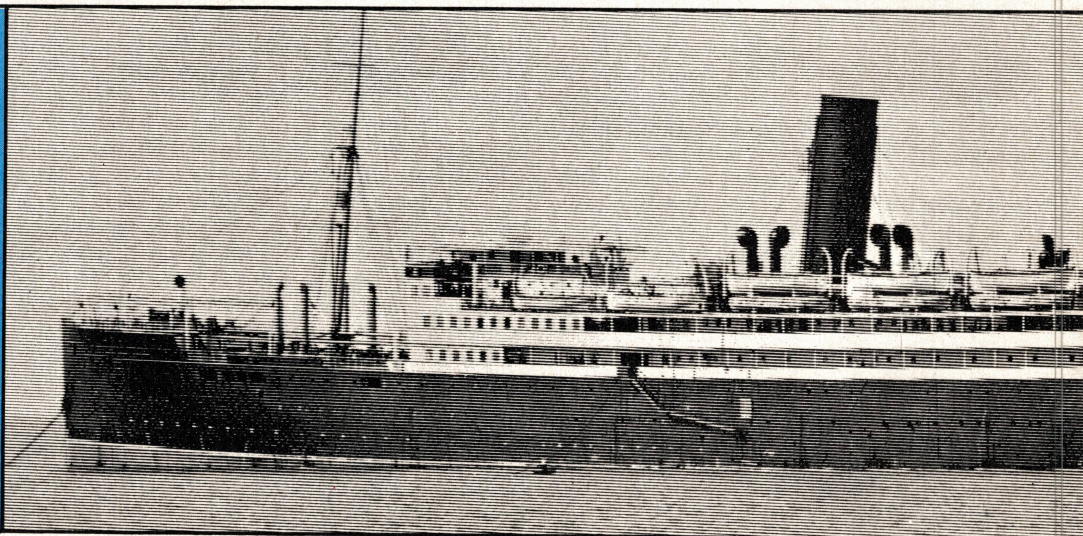
(Continued on Page 111)





photograph by Laurence Gould

Lying in 15 to 50 feet of water, on a reef 8 miles from the island of Bermuda, the wreck of the Spanish passenger liner, *Cristobal Colon*, today provides a home for colorful reef fish and beautiful sights for divers. The diver above explores inside the ship's bow section.





One of the main reasons I came to live in Bermuda, a subtropical island paradise, was to dive. I had heard about the abundance of marine life, the 12 month dive season — and, most of all, about the ships which had been lured and captured by the treacherous reef that encircles the island, stretching out as far as 12 miles from the shore.

Within two weeks of my arrival I discovered the local dive club, signed up as a member, and started my training. It was then that I first learned about the wreck of a luxurious, three deck passenger liner called the *Cristobal Colon*. I was able to trace her story, but it was not until 10 months and almost 50 dives later that my curiosity was satisfied.

The original press reports on the wrecking of the *Cristobal Colon* can be found in the local library and its archives, along with the Court of Enquiry verdict and other relevant information. I was also fortunate enough to meet a Bermuda visitor who had actually been a passenger on the ship ten years before it ran aground. This was in its heyday, when it had plushly carpeted corridors, walls paneled with carved mahogany, beautiful chandeliers and dining tables set with silver. There was even a chapel on board with a floor of variegated tiles.

The *Cristobal Colon*, registered in 1923 at Barcelona, Spain set out from New York in the summer of 1936 with several passengers aboard. This was just after the outbreak of the Spanish Civil War. In mid-ocean the command of the ship was seized by a special committee, said to be acting on orders from the Spanish government. After this coup, the ship wandered around European ports until all its passengers had deserted. Managing to evade the Spanish blockade and landing in Santander, Spain, she sailed to Cardiff, Wales. Taking on a cargo of coal in Cardiff, she set off on her last journey.

It is still a mystery whether her destination was Mexico, or Cuba to pick up arms and munitions for the Spanish Loyalist forces. However, on the moonlit night of October 25, 1936, the *Cristobal Colon* was traveling at her full speed of 15 knots. Her

radio officer was enjoying a broadcast from Spain — instead of listening for navigational signals which would have warned him that North Rock Light was out of order. Her captain mistakenly identified the channel lights, which resulted in the ship's running hard aground on a coral outcrop, eight miles off the east end of Bermuda.

There were no passengers on board at the time of the grounding but there was a crew of 160, including six stewardesses.

Salvage negotiations began with a New York firm which was asking \$1,800 a day plus \$50,000 if the efforts were successful. There was also a salvage offer from the local Admiralty. For unknown reasons, Captain Crescencia Navarro Delgado refused these offers for two days. Several attempts were then made by local tugs to salvage the ship, but when these all failed, it was finally abandoned.

The *Cristobal Colon* remained like an iron fortress stuck on the reef with a good deal of its superstructure showing. Looking like a ship triumphantly riding the waves, it was a perfect decoy and enticed the Norwegian freighter, *Iristo*, to its doom on a nearby reef in 1937. As a result, the *Cristobal's* funnel and masts were removed to prevent another mishap.

In 1942 the U.S. Air Force used the *Cristobal* for target practice and, after six years on the reef, she finally slipped into a watery grave beneath the waves. Thirty-six years later I dived on the wreck. I was immediately struck by its enormous size. Originally 480 feet long, it now covers an area of approximately 100,000 sq. ft. The hull is broken into three main sections, the bow, mid-section and stern, which straddle the reef outcrop on which the ship originally became impaled. The bow lies nearest to the island and in 15 to 45 feet of water. This section of the hull is fairly well intact and it is possible for a diver to swim inside. Some of the original deck railings are still in place, although they are now covered with swaying deep purple seafans, sea rods and other creatures.

The mid-section lies scattered in shallower water, at about 20 feet. The most outstanding features here are two enormous propellers, one lying flat and the other standing vertically with its six foot blades — these had been carried on deck as spares. A diver can also see two of the original six vertical boilers along with a four foot winch, the remains of the four large 1775 hp steam turbine engines and an assortment of other machinery including pipes, valves and gear boxes, some of which are brass or copper.

Nearby there are two giant flywheels, about 8 feet in diameter, which are attached to the twin prop shafts. These drop down to 40 feet and lead to more of the mid-section superstructure which is lying on its side with a row of holes where the brass portholes used to be. It is also possible to swim into this section. Here one finds the remains of the passengers' bathrooms, with baths, toilets and even some floor tiles still intact.

The stern section lies in about 50 feet of water, also on its side, displaying a string of portholes which look very attractive with sunlight streaming through them. The stern deck railings are also still intact.

Scattered all around the wreckage are pieces of coal. This was the *Cristobal's* cargo when it sank. Shells can also be found, remnants from the Air Force bombing in 1942. All of the superstructure is encrusted with brain, star and fire coral.

Since the wreck is on the edge of the outer reef and eight miles from the island, there is an abundance of fish life, including: coney, angelfish, parrot fish, butterflyfish, wrasses and rock beauties, as well as pelagics such as great barracudas, bonitos and jacks. There are also special visitors which can be found in enormous schools — creole wrasses with rich purple bodies and bright yellow lips.

Since my first dive on the *Cristobal Colon* I have been back many times. For me there is always a certain magic about this wreck, not merely because of its sad story but also because on each dive there is something new to see, find or experience among the wreckage.

by Lorraine Robinson  
mystery surrounds 480ft. 3 deck  
passenger liner sunk 43 years ago

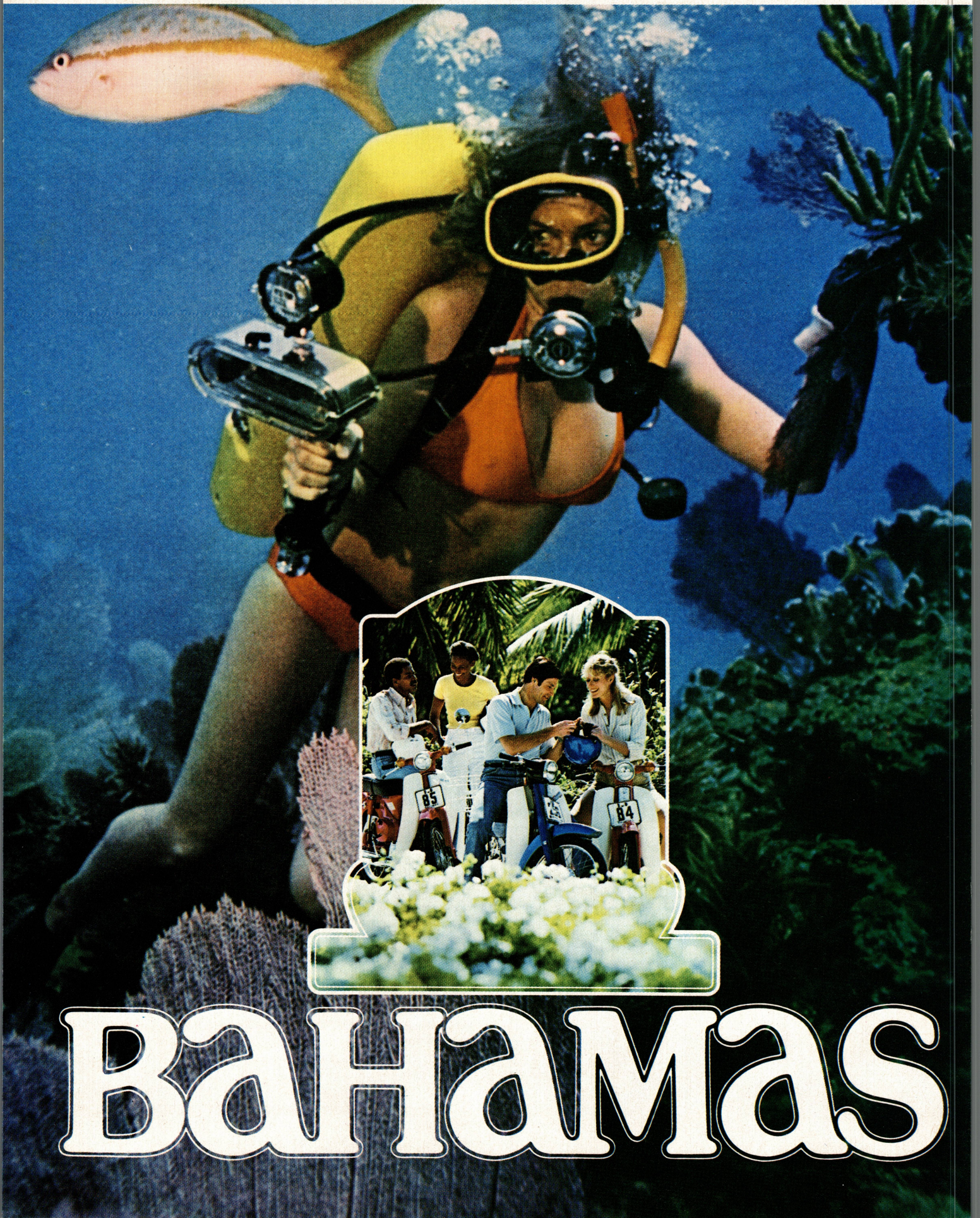
# BERMUDA'S CRISTOBAL COLON



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## CAYMAN PHOTO CONTEST

The second annual Pirate's Week Underwater Photo Contest will take place on Grand Cayman Island from October 27 to November 3, sponsored jointly by Sefton's Undersea Photo Supply and Cayman Camera.

First place winner, for the best overall roll of color film shot in Grand



Cayman waters during the Pirate's Week festivities, will be a 6 day/7 night EP dive package vacation. Accommodations will be furnished by Spanish Bay Villas Condominium Resort. Twelve boat dives will also be furnished by the adjacent Spanish Bay Reef Resort.

Second place winner will receive a new Nikonos III camera. Entrants must be on Grand Cayman during Pirate's Week and must pre-register at either photo store sponsoring the event. Color slide or print film may be used and will be processed on the island just before judging. There is no entry fee, but participants are asked to pay for processing at local rates. Only Ektachrome slide (E-6) films and Kodachrome print films will be accepted.

Persons expecting to be on Grand Cayman during Pirate's Week may obtain contest details by writing (air mail): Ron and Nancy Sefton, P.O. Box 1200, Grand Cayman, BWI.

### JAMAICAN CORAL

The Jamaica Tourist Board has announced that regulations are now in effect to prohibit the removal of black coral from Jamaican seabeds.

Sande Levinson of Atlas Travel in New York City, a specialist in Caribbean dive trips, commented on the regulation: "Divers should not remove anything, living or dead, from the sea. The underwater environment has taken centuries to evolve. It is irreplaceable and, when a diver removes part of it, he denies the experience to the next diver."

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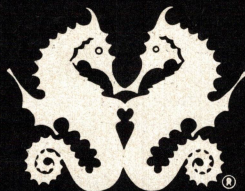
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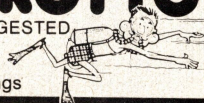
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On October 6, 1979, Douglas Faulkner, well-known underwater photographer-naturalist, will host a tour to Palau, Micronesia. Doug will be returning to many of the dive sites documented in his beautiful book about Palau, *This Living Reef*.

The tour will include the charter of a Cessna 206 for aerial photography flights, a visit to a remote Palauan village, a feast, lake and cave dives and other rarely visited dive sites.

Cost for the 14 day program is \$1,895 per person, double occupancy and includes round trip air fare from the West Coast. Also included are all accommodations, transfers, lunches, dive permits and nine dive days with boats. A four day extension to Truk Lagoon is available on request.

For information contact: Poseidon Ventures, 359 San Miguel Drive, Newport Beach, CA 92660.

## CAYMAN BRAC DIVE PACKAGE

The Brac Reef Hotel and Maelstrom Divers Ltd. are offering new dive packages on Cayman Brac, one of the three Cayman Islands.

Located on the southwest shore of Cayman Brac, the hotel provides breakfast and dinner, air conditioned room with private bath, maid service, tennis and volleyball courts and a pool overlooking the offshore reef.

Maelstrom Divers, under the direction of divemasters Bill Cass and Jim Ketrov, has two boats which can accommodate up to 40 divers. A familiarization dive, two tank-dives daily and one night dive are included in the four and five day packages. Two night dives are included in the eight day package. Tanks, backpacks, belts and weights are provided. A dive trip to Little Cayman and moonlight cruise with complimentary wine and beer are also available at \$10 per person.

Red Carpet Flying Service flies direct to Cayman Brac from St. Petersburg, Florida for \$131 return, including departure tax. Cayman Airways services Grand Cayman from Miami and Houston with Trans Island Airways providing inter-line service between Grand Cayman and Cayman Brac.

For information and reservations, call the Cayman Islands Reservation Service toll-free (800) 837-8777. Florida residents call (800) 432-4858; in Miami (305) 448-3634. Or call the Brac Reef Hotel direct at (809) 948-7323.



## JAMAICA TREAT

(Continued from Page 103)

hand light. The sides of Airport's caves are covered mostly with fine red-violet coralline algae, soft yellow sponges and the black, long-spined sea urchin. A patient diver may find an assortment of weird nudibranchs in some of the little side tunnels in the reef and a leisurely swim along the reef front will reveal the strange elephant trunk sea cucumber. This furry beast protrudes from beneath sandy-bottomed ledges and gropes about, processing sediment. Grab one for a real experience. Then let it go, like everything else Jamaican. The reefs and their inhabitants are under strict protection.

Those who favor greater depths, I am told, will find Point and Further Point, the seaward reefs from Airport, the dives of their lives. I am not an experienced deep diver, but I've seen friends emerge from a dive at Point with one huge smile and a constant stream of impressions. The reefs top off here at about 90 or 100 feet, and drop along a wall of well-hung plate corals as deep as one might wish to go.

East of Montego Bay stretches a long train of surf-washed reefs and quiet lagoonal waters, but most of these reefs are accessible only by shore swims. Accommodations can be had in St. Ann's Bay, Runaway Bay, Ocho Rios, and Port Antonio — details vary and it is

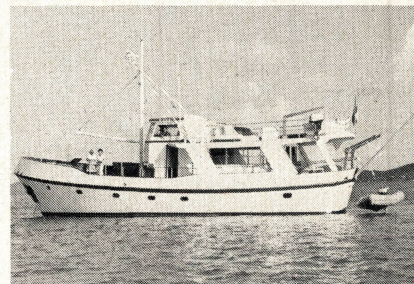
best to plan through your local dive shop or travel agent if you haven't your own friends and contacts on Jamaica. Where the overpowering theme of Montego's reefs is labyrinth, the north coast reef is a series of terrace-like meadows of lush coral growth, broken only by ever-widening serpentine sand channels that spill over the escarpment to a sand plain, or moat, at 70-100 feet depending upon where one goes. In the moat float pinnacle reefs, whose bases lie on the steepening fore-reef slope and eventually give way to the vertical wall of coral.

Shy, set apart, restful and magical, Negril is an island within an island in spirit. The reefs are most peculiar, and are arranged in a series of banks which sit atop apparently relict reef structures. Shallow elkhorn reefs surround Booby Cay, a short, pleasant swim from the Negril nude beach. Several hundred yards seaward of this fringe are extensive and weird shallow reef platforms, bottoming out on a sand and algal plain at 30 feet. In many places there is a third reef bank at 60 feet, consisting of cross-linked, short pinnacles and knobs of star coral with small ledges and tunnels. A fourth bank of reefs, at about 120 feet, finishes the series with forests of black coral.

Vacation diving in Jamaica right now means roughing things just a bit, but believe me, you won't regret it. ➤

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A 65 foot all wood Italian trawler, the *Twenty One*, is now available for charter throughout the U.S. and British Virgin Islands, as well as for down island trips. Especially built for the diver, this is one of the most luxurious dive yachts in the Caribbean.



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# SOUTH CAICOS





**C**ruising schools of big amberjack, a 200 pound loggerhead turtle within ten feet of my grasp, a black-tip reef shark darting by in the distance. "What next?" I asked myself. The answer came quickly as I watched a dozen huge silvery African pompano slowly materialize from out of the deep blue. Hovering high off the ledge of the drop-off, they glided back and forth with criss-crossing patterns, showing little concern for the divers. I finished this particular dive by sighting a six pound lobster, a huge spider crab and two stingrays. For a single tank of air, it was impressive.

Why does South Caicos enjoy such a constant parade of what would normally be deep water pelagics? This island is but one of the several islands that make up the Turks and Caicos Islands in the West Indies. And, while the shallow waters of the Caicos Banks border her western shores, the east side of the island is perched on the edge of an underwater cliff that plummets thousands of feet. Twenty-one miles directly oppo-

known as the Admiral's Arms Inn. With a picturebook view from the bar and restaurant, this small but growing hotel can provide accommodations for up to 35 people. Present plans call for 12 additional rooms to be built by November, 1979. Also included in the expansion program are two tennis courts, a volleyball/badminton court and a larger restaurant. Managed by Joe and Judi Esposito, the Admiral's Arms Inn was once part of a salt plantation.

The main building, built over 125 years ago, was converted into a hotel some 18 years ago. Retaining all the charm and island atmosphere from plantation days, the old plantation house has become the nucleus for the hotel and is comprised of a game room, sitting room, ship's bar, dining room, check-in desk, manager's quarters and veranda overlooking the pool and ocean. Both PADI instructors and paramedics, the Espositos are tuned-in to divers' needs and capable of handling most medical problems that may arise.

The dive shop, Turk-Cai Watersports, is located on the hotel grounds. Chief divemaster Steve Parker is a PADI instructor with eight years diving experience. Earl O'Neil, an additional divemaster, joined Steve at the resort about six months ago. Both young men are friendly and competent reef guides.

Docked directly in front of the dive shop is a 34 foot triple hull Flattop boat which is powered by twin 75 hp outboards. The dive boat has an incredible 8500 pound load capacity and can carry up to 30 divers with as many as 60 tanks. For smaller groups or for groups larger than 30 divers, Turk-Cai Watersports has just purchased a 22 foot catamaran Flattop. Both boats provide an extremely stable platform for diving in rough water. Most of the dive sites are just 10 to 20 minutes away from the marina, which allows maximum diving time with minimum travel time. On a regularly scheduled day there are three tank dives: a morning departure at 9:00 am for a two tank dive and a 2:30 pm departure for a one tank dive. Night dives are scheduled weekly.

The dive operation maintains an inventory of 80 aluminum J-valve tanks and 12 full sets of rental gear, backed by a Worthington 15 cfm/5000 psi compressor and an Ingersoll-Rand 15 cfm/5000 pump. The 21 cylinder storage bank holds 8400 cubic feet of air.

The Admiral's Arms Inn offers a special one week scuba package for divers. Included are seven nights hotel accommodations, three meals per day, six days of diving including air, tanks, weightbelt, and boat transportation. Total cost is \$356 (based on double occupancy). For four nights, a similar package is only \$214.

The majority of South Caicos' visitors fly direct from Miami via Southeast Airlines. Round trip air fare is \$153 and baggage weighing over 44 pounds is charged 35¢ per pound (strictly enforced). Flights are also available from Nassau via Bahamasair. Private planes can land on the 6500 foot paved and lighted jetport at any time.

Whether you plan to travel alone or with a group, hotel reservations and flight arrangements can be made easily by calling Co-Pilot Travel Consultants in Virginia. They have a toll-free number for out-of-state callers: (800) 336-0173. If you live within the state of Virginia, you can call (703) 533-8500. For information and brochures write to: Co-Pilot Travel Consultants, 6201 Leesburg Pike, Falls Church, VA 22044. ✉

## ISLAND OUTPOST FOR DIVE ADVENTURE

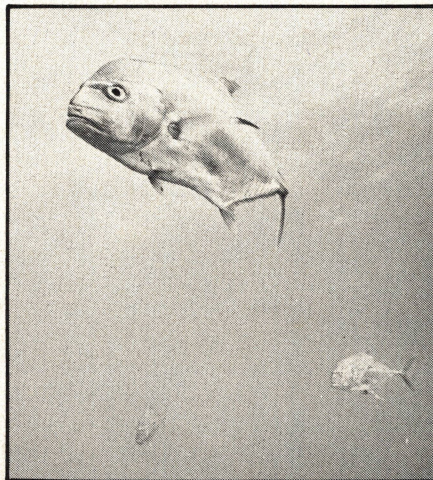
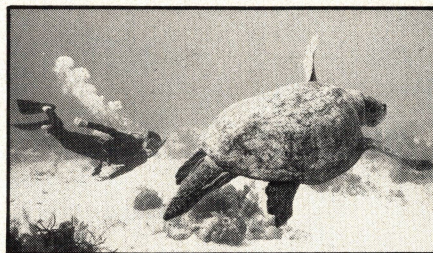
by Geri Murphy

site South Caicos is the island of Grand Turk which also sits on a cliff.

Between these two land masses a natural deep water canyon is formed called the Turks Island Passage. It is this unique combination of geographic location and deep vertical reef profile which creates a natural channel that huge schools of pelagics and deep water creatures must pass through as they migrate from the open Atlantic Ocean to schooling grounds in the south Caribbean. Manta rays, dolphins, barracuda, eagle rays, sharks, turtles, pompanos, and even whales inevitably come through this passage.

Most of South Caicos' 1600 inhabitants reside in the village of Cockburn Harbor. During the last three centuries the island produced thousands of tons of salt, but that industry came to a halt in the mid 60's. Today the salt flats are abandoned and the land is slowly becoming a wildlife sanctuary.

Overlooking the scenic fishing village of Cockburn Harbor is a dive resort



Schools of silvery African pompano and a 200 pound turtle (above) are just a few of the amazing sights to be seen in the waters off South Caicos. A stay at the comfortable Admiral's Arms Inn, with its pleasant veranda overlooking pool and ocean, puts daily diving at the doorstep. A 34 foot Flattop boat, operated by Turk-Cai Watersports, transports divers to interesting sites within minutes. Vacationing divers may fly directly from Miami to the island via Southeast Airlines.





# CHUB CAY

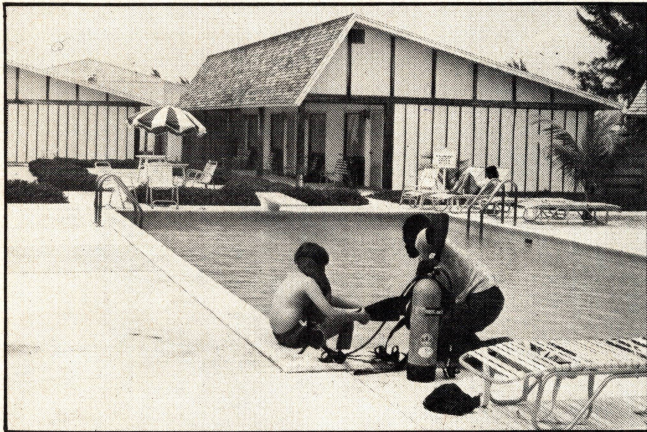
BAHAMAS

A FISH WATCHER'S  
DELIGHT





**Located at the Chub Cay marina, next to the yacht club, the new Chub Cay Dive Center is equipped with a full line of rental gear, three dive boats, and two 5000 psi compressors. Diving directly off the cay is a fishwatcher's delight.**



**Text and Photography by Paul J. Tzimoulis**

One of the newest dive resort facilities in the Bahamas is the Chub Cay Dive Center, located at an exclusive fishing resort in the Berry Islands. Just north of Andros Island and between Nassau and Bimini, this scuba facility adds a new dimension to Bahamas diving.

Chub Cay is a small island, seven miles long and one mile wide and at the southern end of the Berries. It is perched on the very edge of a deep channel known as the Tongue of the Ocean. The edge of this unique channel forms a spectacular vertical drop-off and natural fish trap for ocean-roaming fish.

At the western tip of this small island is an exclusive fishing resort known as the Chub Cay Club. In operation for 19 years, this club has primarily catered to deep water fishermen and yachtsmen and has hosted many big game fishing tournaments. It is a small, comfortable and tastefully designed resort, completely self-sufficient with its own desalination plant, water tower, electrical generating plant, airport and marina.

The Chub Cay Club is basically a conglomerate of three separate and distinct resort centers. There is the Yacht Club, which is a group of 18 attractively furnished hotel rooms conveniently located right at the marina, complete with its own freshwater swimming pool. These particular accommodations are ideal for divers since the dive center, dive boat, and restaurant are but a few steps from the hotel rooms. The Beach Club, located on the far side of the marina, is another complete complex of 20 rooms situated close to the beach and a large freshwater swimming pool. The Villas are a group of eight private cottages also located on the beach and primarily designed for families and small groups. There are two restaurants, both offering excellent menus.

Chub Cay Club also boasts one of the finest deep water marinas in the Bahamas. There are 75 separate slips for both large and medium sized yachts as well as sailboats. The channel and marina will accommodate vessels with up to a nine foot draft and up to 146 feet in length. Water, fuel and electricity are also available.

Although fishing and yachting are regarded as the main activities at Chub Cay Club, the resort does offer many other recreational activities. There are two asphalt-topped tennis courts close to the marina with lights for nighttime playing. There is also a 350 foot driving range for golf enthusiasts and some 20 rental bicycles for touring the island. One of the most recent additions is a mile and one-half nature trail for hikers and birdwatchers who are interested in viewing the flora and fauna unique to this Bahamian island. For those who prefer quiet relaxation, there is swimming, sunbathing and beachcombing on several magnificent untouched sand beaches which rim the island. Chub Cay is a quiet, relaxed island resort with a small population of 50 residents who work at the hotel or live in the 15 private homes nearby.

Eight months ago the Chub Cay Club proudly opened its new dive center. This small but well equipped facility is located right at the marina close to the yacht club. Two Worthington 5000 psi air compressors have been installed complete with four giant high pressure flasks which can store 10,000 cubic feet of high pressure air. The dive center's equipment includes 60 rental scuba tanks, a dozen single-hose regulators, a dozen BC's plus a variety of small accessories, weightbelts, and lead shot/marbles for At-Pac units.

The dive center has three different dive boats of various sizes to accommodate both small and large groups of visiting divers. The largest is a 36 foot triple-hull Flattop, powered by 140 hp Evinrudes and capable of carrying 22 divers. There is also a 26 foot twin-hulled Flattop that can carry up to 12 divers and a 24 foot Proline utility craft which can carry four divers. The dive center is managed by Tony Taylor, an experienced Bahamian guide who has worked at several other dive resorts in the Bahamas.

Because of its close proximity to the Tongue of the Ocean, Chub Cay is a fishwatcher's delight. On every dive there are exciting encounters with schools of fish including: Bermuda chub, yellowtail jacks, amberjacks, horse-eye jacks, eagle rays, and big snappers. The reefs are literally teeming with fish.

There is an exciting drop-off located less than a mile directly out from the Chub Cay marina. The top of this wall lies in 60 feet of water and drops away to approximately 6000 feet. Visibility along the drop-off ranges from 100 to 200 feet and it is here that divers will frequently see giant groupers and eagle rays cruising by. The top of the wall is decorated with a variety of colorful sponges and tropical fish.

One-half mile out from the marina and one-quarter mile south of Mama Rhoda Rock is lovely Squirrelfish Reef. Depths average 20 feet and the coral formations stretch for more than one-quarter mile across the bottom. In addition to the great abundance of squirrelfish, this reef also supports a large community of angelfish, snappers, grunts and groupers. The bottom terrain consists of high coral heads decorated with sea fans, gorgonians and sea plumes. Large numbers of Christmas tree worms can be found on many of the high coral heads. Other good dive spots around Chub Cay include Chub Point, Diamond Rock, the Ledge and the Plane Wreck.

Getting to Chub Cay is amazingly simple and easy. This small island is only a 15 minute flight from Miami and there are private charter flights scheduled on an almost daily basis. The resort has its own 5000 foot runway which is large enough to accommodate private jets and small commercial airliners. Chub Cay is also designated as an international port of entry and visitors are quickly and easily cleared through Bahamian Customs and Immigrations. Hotel reservations and flight arrangements can be made by contacting Underwater Unlimited, 216 Palermo, Coral Gables, FL 33134. Should you want to discuss your trip or confirm reservations quickly, you can call (305) 445-7837. Bookings and arrangements are handled by Jules Craynock, a certified instructor and experienced Chub Cay diver on staff at the dive store. ➤



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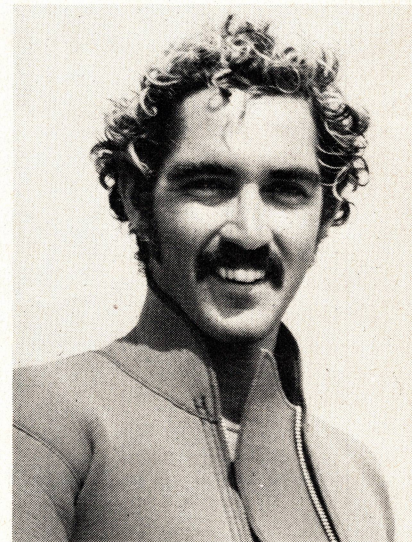


**CONCH OUT ON CAICOS**

Photo by Rick Frehsee

## SAN SALVADOR DM's PROMOTED

Dick Batchelder, president of Columbus Landings Service Co., Inc., recently announced the promotion of San Salvador Island's two oldest and most experienced divemasters. Chris



McLaughlin, senior divemaster at the resort, is now in charge of all daily dive services and customer relations. McLaughlin has been a divemaster at San Salvador more than five years. A certified NASDS and PADI scuba instructor, he formerly worked as an instructor for a Virginia dive store.



Al Zamrok is now in charge of the complete marina and dive shop operation, dive boat maintenance, outboard engine repairs, scheduled fishing boat departures, air compressor servicing, and dive equipment maintenance. Zamrok has served as a divemaster at San Salvador more than three years. He is also a certified NASDS and PADI scuba instructor from Virginia.

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Dave Woodward, the resident underwater photo pro, is in charge of the resort's Underwater Photo Center.

Information and prices on the resort's dive packages can be obtained by writing to: Dick Batchelder, Columbus Landings Service Co., Inc., P.O. Box 1492, Ft. Lauderdale, Florida 33302. For immediate information and reservations, call U.S. toll free (800) 327-9473. In Canada or Florida, telephone (305) 566-7741. >

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The course has been approved by the National Scuba Training Council and certifications are presently being issued by PDIC, PADI and CMAS. Courses convene monthly. For information on enrollment, contact: Hall's Diving College, 1688 Overseas Hwy., Marathon, FL 33050. >



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## DIVING THE TOP OF THE WORLD

BY TED BOEHLER

**F**ins in hand, I stood panting in the thin atmosphere. The Lake of the Sun glistened before me, reflecting the snowy walls of the volcano rising into the mist. I shivered, not so much from the cold as from the sheer anticipation of making a dive here, in the highest lake in the world.

From the base of the 6000 foot valley below, the Toluca volcano in Mexico rises to nearly 14,000 feet above sea level. Secreted within its perimeter are two lakes, named by the Aztecs Lake of the Moon and Lake of the Sun. These twin lakes are the highest known in the world, higher than Peru's Lake Titicaca.

Geologically, the lake beds are the result of two depressions left by a cooling lava plug. Icy water from years of snow and storms eventually filled the depressions, forming the lakes ages before the first Aztec priest journeyed here about 1000 years ago.

Not surprisingly, little archaeological work has been done in the lake. In fact, because of the brutal conditions, only a handful of dives have ever been

made here. Violent storms and 70 mph winds frequently sweep the landscape. The ever-present clouds, which sometimes pull back to let the sun shine through, can recede again bringing near zero visibility in an astonishingly short time.

Javier Maas Moreno, diving officer at the university in Mexico City and a personal friend, had invited us to make the trip. Our dives would test a new prototype set of high altitude tables developed at the university.

Most divers are aware that altitude diving requires reduced bottom time and depth limits because of the low atmospheric pressure at the surface. The U.S. Navy dive tables are based on returning to a surface pressure of 14.7 psi (one atmosphere). Unfortunately, at 14,000 feet above sea level, we were breathing air at about half the normal pressure. Significant dive limits had to be imposed to prevent the bends.

The low air pressure also means low "partial" or component pressures of the air. The low oxygen partial pressure is particularly a problem. Climbers and backpackers refer to the problem as "altitude sickness." It causes lethargy, fatigue, headache, dizziness, nausea and vision difficulties. It is simply a result of the body's not getting enough oxygen to supply its needs.

I found in preparing for the dive that the simplest tasks required frequent

rest stops. I became lightheaded and out of breath just from carrying my dive gear 50 yards to the water's edge! My sea level circulatory system was taking quite a beating in the thin air. I envied my Mexican companions' extra red blood cells developed during a life spent at 7000 feet in Mexico City. The extra blood cells help improve oxygen transport to the tissues.

The low oxygen partial pressure has other amazing effects. The use of a snorkel is impossible because of the breathing inefficiency that it introduces. You simply can't get enough air through it. All of the normal little hindrances to breathing that are acceptable at sea level are simply intolerable here. The use of a snorkel, a long surface swim, too tight a hood, a restricting wetsuit and many other factors can literally cause a diver to black out at this altitude. We carried several portable oxygen bottles with masks to revive anyone who began to feel dizzy.

To further complicate the dive planning, our normal depth gauges would not read correctly here. Since we were entering fresh water, the difference in water density required a conversion factor to calculate depths; not even the standard ascent rate of 60 feet per minute could be used. The computer dictated a 35 feet per minute rate of ascent.

The problems continued. Traveling from 7000 feet up to our current al-

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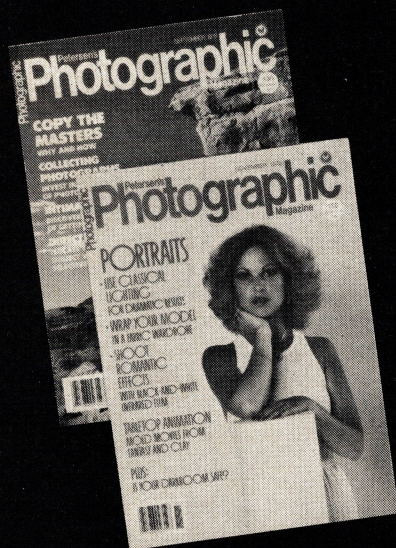
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titute, within the span of a few hours meant that we had more nitrogen in our systems than was prescribed for beginning a dive at 14,000 feet. We had not yet desaturated to ambient pressure so, in effect, we already had residual nitrogen in our systems. The only choice was to assign ourselves a suitable repetitive dive group, making our first dive in the lake, for all practical purposes, a repetitive one.

Cold and arduous dive factors further reduced the normal allowable time and depth limits. I traced my finger along the computer print-out to find our new dive profile — an incredible answer: Twenty minutes at 40 feet as the maximum safe dive! A normal ocean dive would have allowed 210 minutes at the same depth. The information confirmed our belief that the previous divers in the Nevado de Toluca were lucky rather than knowledgeable. The dives were undoubtedly made in ignorance of proper diving schedules. Probably the freezing temperatures and poor quality wet-suits drove the divers from the water before they could exceed their limits.

The team on this dive consisted of myself, Javier and two of his highly experienced divemasters. He and I would lead, the other two divers would parallel us, slightly behind and to the side. Another diver waited at the water's edge, suited up to help in case of emergency. The backup diver stood by the safety line and oxygen bottles.

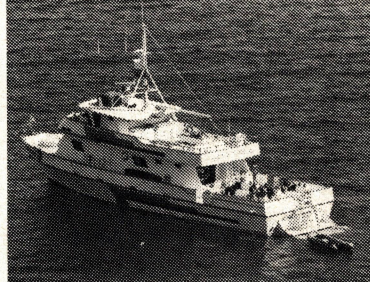
I inflated my dry suit slightly but it still felt like I was leaning against a refrigerator door. The plan was to move to chest deep water and then drop under, avoiding surface swimming as much as possible.

As I crouched in the water to check my buoyancy I discovered a disconcerting fact. I was too light. No air in my flotation pack but still too light? Not possible I thought; I should actually be overweighted due to the lesser density of fresh water. Reluctantly, I exhausted all the air from my dry suit. (And discovered to my dismay a pinhole leak in the crotch of my exposure suit — I may never be the same.) Still too light! A pull from my hands finally got me under but it was not until later that I discovered the problem: It was a simple application of Boyle's Law. The one-quarter inch thick suit material, composed of foam celled neoprene, had expanded to a hefty three-eighths inch. The increased volume meant increased buoyancy.

We kicked along slowly and carefully, trying to keep our fins away from the bottom. It was like flying above a cloud bank, but the clouds were the consistency of chocolate whipped cream. I once sank to my thighs before using my BC inflator to lift myself out of the muck.

Some people believe that the lake

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## TOP OF THE WORLD

hides gold and other treasures sacked from Mexico during Cortez's conquests. The retreating armies were believed to have thrown the treasures into the water to lighten their bundles as they crossed the mountains.

Visibility was surprisingly good (about 20-30 feet) but it clouded quickly from the thrusts of our fins. We were forced to keep moving to avoid losing one another in clouds of silt.

Javier had warned me that I would get my best photos in the first few minutes. I could see now what he meant as the visibility dropped and the temperature started affecting my hands. The cold water numbed my exposed face and my head started to hurt. It was becoming progressively difficult to concentrate on f stops and camera settings. I was distressed to realize I no longer had any feeling in my thumbs.

As I fumbled to pull back the edge of the glove covering my watch, Javier touched my arm. Ten minutes more he signaled. Off to the left Roberto and Regan were hovering upside down. Roberto's arm was shoulder deep in the fluffy bottom. As he pulled it out, accompanied by a billowing cloud of sediment, I saw a whiteish baseball-sized object in his hand. Copal! An offering of incense made to the water god, Tlaloc, perhaps 1000 years ago!

I focused quickly, already having trouble holding the camera in my numbed hands. Roberto was cradling the copal ball in both hands fearing the loss of dexterity would cause him to drop it. We were all shivering uncontrollably now; it was time to leave.

Inside the van we continued to shiver in unison, helping one another pull off layers of rubber insulation. The wind had picked up and it periodically shook the vehicle with surprising force. The clouds that had been hovering lightly on the lip of the volcano had begun sliding down the slopes toward us. I hurried to shoot a few pictures of the incense ball while the others hastily threw dive gear into the van. The sun god no longer smiled; the sky looked ominous.

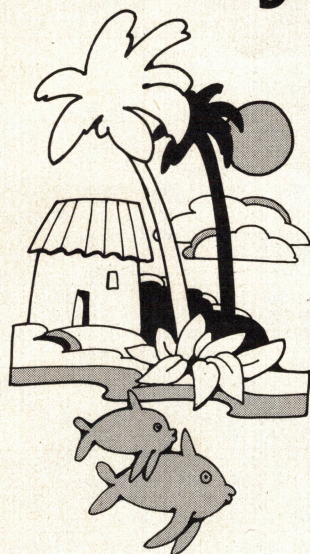
We were all at a loss to describe the exhilaration that we felt: challenging, exciting, beautiful — none of the words seemed appropriate. There was only one thing left to do before we hurried down to a safer elevation.

Javier stood beside me with the copal ball in his hand. We exchanged brief glances and an unspoken understanding. The waters had been good to us.

It was a pretty fair throw, high and arching. The copal offering disappeared below the surface with hardly a splash.



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LAGUNA SEASPORTS\*  
7066 Van Nuys Blvd., Van Nuys (213) 787-7066  
18503 Hawthorne Blvd., Torrance (213) 542-8609  
3335 Motor Ave., West Los Angeles (213) 559-7771

DIVING LOCKER 1020 Grand, San Diego 714/272-1120  
155 So. Highway 101, Solana Beach 714/755-6822  
348 E. Grand, Escondido 714/746-8980  
1148 Delevan Dr., San Diego 714/231-8331

WALLIN DIVE STORE (415) 592-7606  
1656/58 El Camino Real, San Carlos, Ca 94070  
U/W PHOTO SPECIALISTS - AIR - INSTRUCTION  
Rentals-Repairs-Travel-Marine Art-Books-Jewelry

CATALINA DIVERS SUPPLY  
Avalon, Catalina Island 90704 213/510-0330  
Rentals - Sales - Air - 2 Locations  
peasure Pier & Avalon Underwater Park

SPORT CHALET DIVERS  
920 Foothill, La Canada, Ca. (213) 790-2717  
SALES - RENTALS - REPAIRS - CHARTERS  
3300 PSI, L.A. COUNTY-NAUI INSTRUCTION

NEW ENGLAND DIVERS — LOS ANGELES  
11830 W. Pico Blvd., West Los Angeles (213) 477-5021  
Take Bundy off Santa Monica Freeway to Pico Blvd. Open  
7 days. Mon-Sat. (10 am to 8 pm) Sun. (9 am to 5:30 pm)

NEW ENGLAND DIVERS — SAN DIEGO  
3860 Rosecrans St., San Diego (714) 298-0531  
8363 Center Dr., La Mesa (714) 462-4570  
Open 7 Days. Weekly Boat Trips.

OCEAN SPORTS, LTD. 714/840-4840  
16446 Bolsa Chica, Huntington Beach, CA  
Skin & Scuba Gear - Sales - rentals - repairs - air  
NAUI•PADI Certified Instruction - dive trips - surfboards

SEA VENTURES DIVE BOAT  
2747 Wendy Place, Port Unenue, CA 93041  
(805) 486-0403 (24 hrs.)  
CHANNEL ISLANDS TRIPS

AQUA TECH DIVE CENTER (209) 577-DIVE  
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Cayucos "At The Pier" 773-4794  
Pismo, 750 Price St.  
NAUI-PADI, Rentals, Air

## COLORADO

COLORADO SCUBA SCHOOLS PADI  
Exec. Office, 29573 Paintbrush, Evergreen, CO 80439  
Ph: 674-4449 (4) Scuba Facilities & Gear  
Hdq., Denver, St. Thomas, V.I., Hawaii

## CONNECTICUT

ORBIT MARINE SPORTS CENTER (203) 333-DIVE  
3273 Fairfield Ave., Bridgeport, Conn. 06605  
Tel. (203) 333-DIVE - Sales - Rentals - Air - Dive Trips  
Hydro - NAUI Instruction - Visual Inspection. Open All Year!

INNERSPACE DIVING SUPPLY CO., INC. (203) 646-2352  
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Certified Instruction in all levels-NAUI-PADI-YMCA

THE DIVING BELL (203) 775-3573  
Route 7, Brookfield Plaza, Brookfield, CT  
Full Service Pro Dive Shop - P.A.D.I. Instruction  
DIVE LAKE CANDLEWOOD / Weekly Boat Trips

UNDERWATER SWIMMERS, INC. (203) 932-0258  
526 Main Street, West Haven, Connecticut  
Scuba Lessons, Equipment Supplies, Air, Repairs,  
Commercial Work, Rentals, Hydro Testing

JACK'S DIVE CENTER  
Rt. 10, Plainville, Conn. 06062 (203) 747-3170  
Sales - Service - Instructions - Rentals - Trips  
5,000 PSI Air - AGA Divator - HOME OF FREE DIVES

A-1 DIVING CENTER (203) 756-8451  
863 Meriden Road, Rt. 66, Waterbury, Conn. 06705  
Hydrotests - Repair - Rentals  
Certified NAUI & YMCA Instruction-Wholesale & Retail

TRI-CITY DIVERS 872-6547  
Route 30, Post Rd. Plaza, Vernon, Ct - Exit 96 off I-86  
Sales - Rentals - Repairs - Air - Instruction - Trips  
NAUI - PADI - Noon to 8 Daily, Sat. 10 to 5:30

SKI & SCUBA SHOPPE (203) 377-6969  
Foot of Broad St., Stfd. Marina, Stratford, CT  
Professional Instruction - All Levels  
Full Service, All Year, Dive Trips To Everywhere

SEA WOLF DIVER'S SUPPLY Phone 873-8135  
Town Street, Route 82, East Haddam, Conn. 06423  
Sales - Certified Instruction - Rentals - Repairs - Air  
A Full Service Dive Shop

## FLORIDA

UNDERSEAS, INC. (305) 872-2700  
Box 319, U.S. 1, Big Pine Key, Florida 33043  
Equipment - Air - Rentals - Repair - Reef Charters - Shelling  
Guides - Photo - Spearfishing - Tropical Fish Collecting

MILEO PHOTO SUPPLY, INC.  
2105 Ponce de Leon Blvd., Coral Gables, Florida  
Toll-Free In Florida - 1-800-432-2384; Miami 446-0855  
Underwater Photo Equipment and Supplies

PLANTATION INN MARINA 904-795-5797  
Box 1093, Crystal River, Fla. 32629 - Rental-Boats-Canoes-  
Scuba Instr.-Package Deals-Private Manatee Obser. Deck  
& Air Sta. @ Divers Giant Spring. Golf/Tennis-100 Rm. Hotel

HERB'S DIVE SHOP 253-7221  
2434 S. Atlantic Avenue (AIA), Daytona Beach, Florida 32018.  
Full Diver Service — Group or Private Classes  
Trips: Reef - Springs - Bahamas - Reef - Springs - Bahamas

SEA DWELLERS DIVE CENTER  
At Port Largo Airport  
Dive charters - Air - Rentals - Instruction  
P.O. Box 1796, Key Largo, Fla. 33037 Ph. 305/451-3640

HALL'S DIVING CTR & RESORT(305) 743-WISH or 743-5929  
1688 Overseas Hwy., Marathon, Florida Keys 33050  
Certified Instruction — Reef Trips — Rentals  
5000 psi air — Repair — 9 to 7 — 7 Days a Week

REEF RAIDERS DIVE SHOP 305-294-0660  
U.S. Hwy #1, Stock Island, Key West, Fla. 305-294-3635  
Two Reef Trips Daily - Wreck and Night Diving  
Air-5000 PSI. Rntl and Sales on all diving equip.

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1605 North Roosevelt Blvd., Key West, FL 33040  
Air, Sales, Repairs, Rentals, Instruction  
Daily Reef Trips - Charters to Dry Tortugas

SEA TRAIL MOTEL - REEF TRIPS (305) 852-8001  
Rt. 1, Box 91, Key Largo, FL 33037 - Mile Marker 99-98  
T.V., Air Cond., and Refrig. - Budget Rates  
Night/Wreck Dives - Snorkeling - Inst. - 6 Passenger

CAPT. BOB KLEIN'S HOLIDAY INN SCUBA SHOP  
Key Largo, Florida 33037 305-451-DIVE  
Guided Reef Trips/Cay Sal Blue Hole Dives  
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4591 St. Johns Ave., Jacksonville, Florida (384-3655)  
13637 Beach Blvd., Jacksonville, Florida (246-6729)  
Sales Representative - Rentals - Air - Instruction - PADI College

DOLPHIN DIVE CENTER  
US 1, Marker 103, Box 1936, Key Largo, Fla. 305/451-1381  
Complete dive center, PADI, group-club charters,  
Daily reef trips, spearfish, tropicals, photo

HARRY KEITZ'S AMERICAN DIVING HEADQUARTERS  
Rt. 1, Box 2748, Key Largo, FL 33037 (305) 451-0037  
Daily Dive Trips to Pennnekamp Park, Group Rates,  
Motel Reservations, Photo Rentals, Complete Pro Store

ROCK REEF RESORT Phone 305-852-2401  
Box 73, Key Largo, Florida 33037  
5 minutes to Coral Reef State Park. Swimming, Skiing, etc.  
On water. Family units A/C, color TV.

ANGLER'S DIVE SHOP (305) 294-4248  
US 1, Stock Is., Key West, Fla. 33040  
Dive Boat Rentals, Family Reef Trips, Shelling, Air  
Hydro. From the Island you can Drive to and Dive.



## Diver's Directory

(CONTINUED FROM PRECEDING PAGE)

CUTLER RIDGE DIVING CENTER	305/251-2710
20850 So. Dixie Hwy. (US 1), So. Miami, Florida 33189	
Full PRO Shop Sales & Services - Open 6 days	
Air - NAUI Instruction - Reef Trips	
FRED & CINDY'S ATLANTIS MARINA	(305) 664-4318
Florida Keys, Box 708, Long Key, Florida 33001	
Boat Rentals to the Reef - Camping - Motels	
Air - Rentals - Trips - Complete Dive Service	
DIVING SITE	(305) 289-1021
12565 Overseas Hwy., Marathon, Fla. 33050	
40' Dive Boat, Charters, Sales, Repair	
Photography, Hydro Test, PADI	Air \$1.00
NEW ENGLAND DIVERS	
2945 NE 2nd Ave., Miami, Fla.	305-573-4600
9820 S. Dixie Hwy., Kendall	305-667-4622
Sales - Rental - Classes - Instruction	
FRIENDSHIP INN — KEY LARGO near Pennekamp Park	
Box 456, Toll free except Florida: 800-327-8346	
Key Largo, Fla. 33037	(305) 451-1616
Miami (305) 248-1644. Clubs & Groups.	
BILL CRAWFORD'S TROPIC ISLE DIVE SHOP	
P.O. Box 755, Key Largo, FL 33037	(305) 451-1063
Reef Trips — Photo & Scuba Rentals	
NIKONOS REPAIR CENTER	
POWER DIVE — FLY UNDERWATER — CRUISE	
Scuba Tow Plans \$8 — West Sub Plans \$15 — Parts	
Tow & Sub Building Handbood + 3 Tow Plans \$10	
SEATECH CORP., 985 N.W. 95 St., Miami, FL 33150	
OCEAN DIVERS INC. — Beautiful Pennekamp Park	
Reef Ecology Dive	
Group & Instructor Packages	
Box 1113-A, Key Largo, FL 33037	PH: 305/451-0286
DIVER'S WORLD	(305) 655-3045
601 So. Olive, West Palm Beach, FL 33401	
Wreck, Night & Reef diving - Lots of Fish	
Free Air and Dives - Treasure Hunts	
SUNSHINE KEY AQUA CENTER	305/872-2400
Rt. 1, Box 790-L, Sunshine Key, Fla. 33043	
Dive-fish-camp-trailers-rentals & 3500 air-reef	
trips on 65' & 24' boats to LOOE KEY/grp. rates.	
DOLPHIN DIVE CENTER	24 Hour Hot Line
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Instruction - Daily Pennekamp Reef Trips	
Ecology and Island Charters—Cottages and Dorms	
HOLIDAY ISLE DIVE & SWIM CENTER	
Box 482, Islamorada, Florida	305/664-4145
*Ask about our ½ day dive trips	
and our very complete dive shop	
SEAPRO SCUBA CENTER	305-844-DIVE
3619 Broadway, Riviera Beach, FL 33404	
Instruction, Air, Repairs, Rental, Sales	
DIVE PALM BEACH — 37' Custom Dive Boat	
DIVERS' WORLD OF KEY LARGO, INC.	305/852-5498
P.O. Box 1663, Key Largo, Fla. 33037	
On the Atlantic at Rock Harbor Marina - Marker 97.5	
Reef Trips - Air - Instruction - Sales - Rentals	
KEY WESTER INN - LUSH TROPICAL RESORT - ON THE OCEAN	
Dive Shop w/daily reef trips, Tennis, Free Bikes, Free	
airport p/u, pool, sauna, restr., lounge & Disco-Low rates-	
\$26 day. KEY WESTER INN, Key West, FL	305/296-5671
GINNIE SPRINGS, INC.	(904) 454-2202
Rt. 1, Box 153, High Springs, Florida 32643	
72° Clear Springs, Full Service Dive Shop	
5000 PSI Air Station, Canoes, Camp Grounds	
THE REEF SHOP DIVE CENTER & CHARTER SERVICE	
Rt. #1, Box 7 S.D.D., Islamorada (Fla. Keys) — Equipment	
Rentals-Sales-Repair-Air-Day/Night Reef Trips	
Dive Boats-Club, Group Packages-FSDA & PADI Instructions	
NORINE ROUSE SCUBA CLUB OF the PALM BEACHES	
4708 N. Dixie Highway	305/844-2466
West Palm Beach, Florida 33407	
A membership club for divers only	
SUNDIVERS STATION	(305)451-0676
Rt. 3, Box 289-A, Key Largo, FL 33037	
Dive Pennekamp-Reefs-Wrecks-Photography	
Instr.-Guides-Rentals-Dockside Air-Complete Rentals	
Jim Hollis' SCUBA WORLD	305/273-3373
5107 E. Colonial Dr., Orlando, FL 32807	
(Across from Hwy. Patrol Station)	
Sales, Service, Rentals, Tours. Classes-PADI, FSDA, YMCA	
SEA CENTER DIVING HEADQUARTERS	
Mile 30 - Big Pine Key - Florida Keys	
Air - Rentals - Reef Trips - Instruction	
Sales, All Equip. - Box 515 - 872-2243	
PROFESSIONAL DIVING SCHOOLS OF FLORIDA, INC.	
210 & 1540 N. Federal Hwy., Deerfield & Pompano Beach, Fl.	
Bahia Mar Hotel & Yachting Center (AIA) Ft. Lauderdale, Fl.	
Local Reef Trips—Daily (305) 428-0560/785-0780/761-3413	

Coral Sands of Key West (305) 294-7896  
 Reef trips-wrecks-UW photography on 32' dive boat  
 Snorkeling YMCA/PADI Scuba Instruction  
 Coral Sands, P.O. Box 1213, Key West, FL 33040

DIVER'S DEN SOUTH  
 12614 N. Kendall Dr., Miami, FL 33186 305/595-2010  
 P.A.D.I. 5-Star Instruction & Specialty Courses  
 Sales & Service, Local & Island Dive Trips. Photo-Air

KEY LARGO DIVING HEADQUARTERS 24 Hour Hot Line  
 Rt. 1, Box 1936, Key Largo, FL 33037 305/451-1151  
 Pennekamp Reef Trips-Air-Rentals-Dorms-Apartments  
 Group Trips-Cay Sal, Bahama, and Tortuga trips

Miami — U.S. Aquanauts — 1 (305) 545-9000  
 35 S.W. Seventh Ave., Miami, Florida 33130  
 Sales, Rentals, Private and Group Classes  
 Compressed Air Systems and Key Trips

Oceanfront Cottage—U.S. 1, Marker 96, Key Largo, Fla. 20'  
 from Atlantic Ocean. 2 Br., 2 bath completely furnished.  
 Pool & tennis avail. Wkly Rates May-Nov. P. Tanner, 2015  
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Key Largo Condo—2 bedrooms, 1½ baths, accommodates 6,  
 walking distance to Pennekamp, totally equipped, tennis,  
 sauna, boat rentals. Write: Moon Bay Condos,  
 c/o D. Goldstein, 509 Long Rd., Pittsburg, Pa. 15235

OCEAN SPORTS, INC.  
 129 Miracle Strip Parkway  
 Ft. Walton Beach, Florida 904/244-7681  
 PADI — DIVE TRIPS — RENTALS — AIR

NAUTILUS DIVE, SURF & SKI  
 877 E. Palmetto Pk. Rd., Boca Raton, FL 368-0555  
 2700 E. Atlantic Blvd., Pompano Beach 943-DIVE  
 NAUI — PADI — Sales — Rentals — Air

DIVERS UNLIMITED, INC. (305) 981-0156  
 4231 Hollywood Blvd., Hollywood, FL 33021  
 Daily Reef Trips, Wreck & Night Diving  
 Air, 5000 PSI, Rntl., Sales, Basic - Instr. Classes

RESEARCH, SEARCH & SALVAGE (305) 271-3819  
 UW metal detectors, pulse power type,  
 proton magnetometers, sales & service  
 6140 SW 79th Ct., Miami, FL 33143

FLORIDA SCUBA DIVING INSTITUTE (813) 626-DIVE  
 1010 S. 76th St., Tampa, FL 33619  
 Sales, All Services, P.A.D.I. Cert., Private  
 club for divers, Bar, Saunas, Olympic Pool

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 4650 Overseas Highway, Marathon, FL 33050  
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 64 Ft. boat, 5000 psi. New Location-motel-restr., bar

CRYSTAL LODGE DIVE CENTER (904) 795-3171  
 P.O. Box 456, Crystal River, FL 32629  
 Boat & Scuba, Sales & Rental  
 Fresh & Salt Water Diving, PADI Instruction

EASY DOES IT CHARTERS (813) 586-2201, 347-1382  
 Dive - Sail - Sleep on 40' A/C Motorsailer-party to 6  
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 Free Brochure; 9075-130th Ave. N., Largo, FL 33542

## GEORGIA

DIVING WORLD USA  
 2945 Buford Hwy., Atl., Ga. 634-4354  
 All Brands - Whol. & Retail - Repair - Rental  
 YMCA, NAUI, PADI Classes 3 Man Chamber

BRIALAKE DIVERS (404) 321-9539  
 3561 LaVista Road, Decatur, Ga 30033  
 Instruction — Sales  
 Rental — Trips

BERRY ATLANTA 404/766-1186  
 3443 Stewart Ave., Hapeville, Ga.  
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 74-5484 Kaiwi St., Kailua Kona, HI 96740 (808) 329-3168  
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 5 day Cert. Course - Daily Dive Charters  
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SOUTH SEAS AQUATICS Ph: 538-3854, 538-3855  
 1125 ALA MOANA BLVD.  
 HONOLULU, HAWAII 96814  
 Sales - Rental - Boat Charters - Free Brochure

HAWAIIAN DIVERS 808-329-3407  
 Box 572, Kailua Kona, HI 96740  
 "The Experts in Kona"  
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DIVIN' HAWAII CORP. (808) 833-2298  
 5085 Likini St. Honolulu, HI 96818  
 SCUBA & SNORKEL TOURS TWICE DAILY/NAUI & PADI Instr.  
 U/W Photography, Free Transport, Beginners Welcome

GARDEN ISLAND MARINE Nawiliwili Harbor  
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 Fantastic Diving, NAUI/PADI, SCUBA Charters  
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ALOHA DIVE SHOP 395-5922  
 Koko Marina - Honolulu, HI. 96825  
 "GATEWAY TO HANAUMA BAY"  
 Scuba Instruction - Charters - Sales - Rentals - Air

AMERICAN DIVE HAWAII (808) 923-5382  
 P.O. Box 88161 Honolulu, HI. 96815  
 SCUBA & SNORKEL TOURS DAILY/5 DAY CERT.  
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OCEAN ADVENTURES (808) 235-5055  
 46-216 kahuhipa st., kaneohe, hi. 96744  
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 P.O. Box 3005, KAILUA-KONA, HI 96740

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LAHAINA DIVER'S, INC. 808/661-4505  
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 RECOMMENDED BY UNDERCURRENTS

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 Specializing in personal instruction on the  
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 AQUAVENTURE 1655 Oakton, Des Plaines 297-7414  
 AQUAVENTURE Rowling & Euclid, Arl. Hts. 398-5139  
 Instruction-NASDS-Air-Rentals-Tours-Services

WATER SHED DIVE SHOP  
 1028 E. Walnut, Carbondale, Ill. 62901 618/457-3397  
 Sales - Rental - Air - Repair - Recovery  
 NAUI Instructions

ELMER'S WATERSPORTS, INC.  
 2508 Gross Point Rd., Evanston, IL 866-8775  
 Equipment Sales - Services - Rentals - Air  
 Tours - Certified Instruction

DIVE & SKI 425-0822  
 2958 W. 95th St., Evergreen Park, Ill. 60642  
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 6059 W. Addison, Chicago. (312) 725-2032  
 12003 S. Cicero, Alsip. (312) 371-3366  
 1717 Rand Road, Palatine (312) 358-3848

ANCHOR IN SCUBA CENTERS  
 315 W. Ogden Ave., Westmont (312) 971-1060  
 6932 W. 16th St., Berwyn (312) 484-1018  
 UN/H2O Camera Shop - Instructions - Rentals - Tours

INTERNATIONAL SCUBA CENTER  
 9440 S. Roberts Road, Hickory Hills (312) 599-4441  
 Air - Rentals - Repairs - Instruction  
 Underwater photography - Advanced Certifications

MIDWEST DIVING SPECIALISTS, INC.  
 203 S. Linden, Normal, IL 61761 (309) 452-0222  
 YMCA, PADI, Air, Sales, Service, Rentals  
 M thru F 10 A.M.-8 P.M. Sat. 10 A.M.-5 P.M.

ANGLERS CHARTER SERVICE  
 P.O. Box 195, Palos Park, ILL 60464 425-2640  
 Wreck Diving - Lake Michigan Wrecks  
 Guided Dives - Rentals



ACE DIVE SHOP 312/530-7101  
126 S. Villa, Villa Park, IL  
Sales - U/W Tours Salvage Open Sundays  
Air, Repairs, Hydro, Vip, Tumbling Instruction

SCUBA SYSTEMS (312) 674-0222  
3919 Oakton Street, Skokie  
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BLUE HOLE, INC. (309) 676-1852  
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ANGLERS CHARTER SERVICE ph. 312/425-2640  
P.O. Box 5, Palos Park, Ill. 60464  
Wreck Diving - Lake Michigan Wrecks  
Guided Dives - Rentals

## INDIANA

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U.S. Hwy. 12, by 2nd St. Bridge, Mich. City, Ind. 46360  
3000 P.S.I. Fills, Charters, Rentals, Repairs, Hydro.  
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PADI Training Facility

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## KENTUCKY

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Assoc. Sales - Repairs - Rentals - Air - Trips

## MAINE

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Complete Line of Skin Diving Equipment - Sales  
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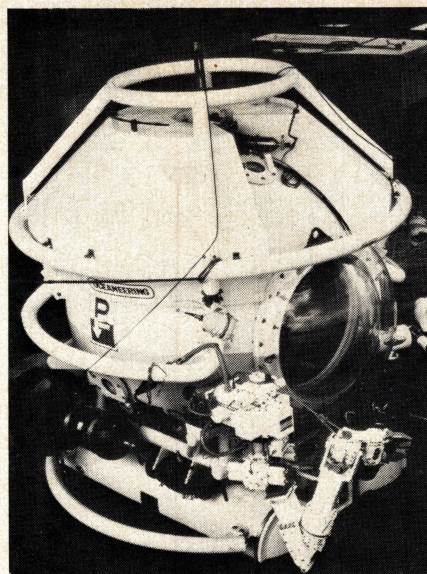
In addition to research and education, the foundation has developed a natural history approach to resort diving that allows visiting tourist divers to become involved in active ongoing underwater research.

PRIDE is a growing non-profit scientific and educational public foundation that depends on its membership for the majority of its support. Donations are tax-deductible and members receive quarterly newsletters. PRIDE encourages people who are genuinely concerned and interested in active participation in its work to protect the few remaining unspoiled islands in the world to write its Director, Chuck Hesse, % PRIDE PO Drawer 3558, Lantana, FL 33462. 🐠

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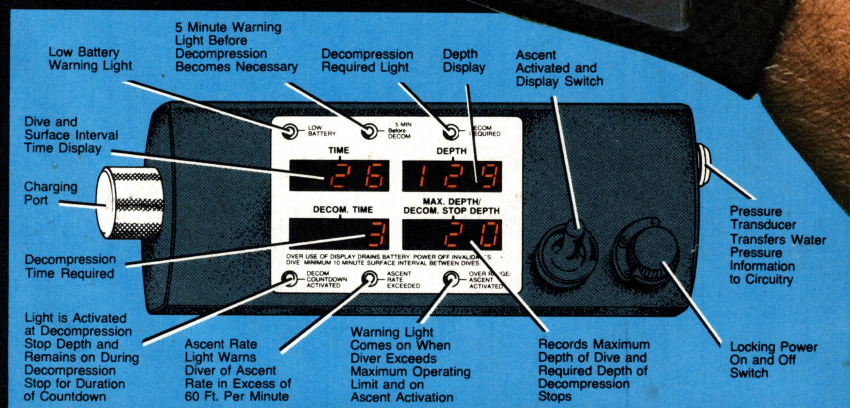


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# THE SEA OTTER WITHOUT A DOUBT THE WORLD'S FINEST BC JACKET



## Compare These Important Features:

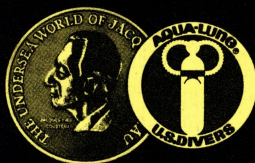
**UNMATCHED CONTROL** After all isn't this what a BC is all about? The L.P. inflator operates very smoothly allowing small fractional trimming motions and the mechanical advantage on our level dump system provides precise venting.

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